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Teaching teams and student achievement in Vermont's middle schools.

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TEACHING TEAMS AND STUDENT ACHIEVEMENT

IN VERMONT'S MIDDLE SCHOOLS

A Dissertation Presented

by

STEVEN B. JOHN

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

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Education Policy and Leadership

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Matthew C. Militello, Chair

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DEDICATION

To my mother and father,

and my maternal grandfather, Johannes Quirijn Borgwat (1892 – 1965).

J. Q. Borgwat was principal of the NUT School in Heerlen, Netherlands from 1927 until he retired in 1950. *NUT* stands for the benefit of the public. The *Nutsscholen* were the first non-religious schools in the Netherlands, founded at the end of the 18th century by the *Maatschappij tot nut van't Algmeen,* the Society for the Benefit of All People. The work of this society is dedicated to the motto, "Knowledge is the way to personal and social development."

ACKNOWLEDGMENTS

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I want to thank my wife, Kimi Hasegawa, our son, Korin Hasegawa-John, and my middle school colleague, John Beagan, for additional editorial critique and support.

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The late Ray Pelligrini of the Vermont Principals Association and my colleagues on the Board of the Vermont Association for Middle Level Education facilitated my access to the field. Stephen Magill and his colleagues at the Vermont Department of Education gave critical technical information and assistance that made my statistical analysis of statewide data efficient and reliable.

I could not have completed this work without my two classmates throughout my doctoral studies, Ron Stahley and Frank Rucker. They were always at my side through good times and the bad.

Finally, I give special thanks to all the teaching teams and their principals who participated in this study. Their commitment and dedication to excellence and equity in the middle will continue to inspire our colleagues across the nation.

ABSTRACT

TEACHING TEAMS AND STUDENT ACHIEVEMENT

IN VERMONT'S MIDDLE SCHOOLS

MAY 2008

STEVEN B. JOHN, B.A., OCCIDENTAL COLLEGE

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In the 1990s many educators asserted that interdisciplinary teams of teachers working with students in middle grades 5–8 were more effective than traditional instruction in isolated disciplines. Research reported elements of team teaching positively affect student learning, behavior, and achievement (Arhar, 1990, 1994; Arhar & Irvin, 1995; Dickinson & Erb, 1997; Flowers, Mertens & Mulhall, 1999, 2000; Mertens, Flowers & Mulhall, 1999). This study identifies the characteristics and practices of teaching teams that correlate with higher student performance in mathematics, reading and writing in the eighth grade.

Student performance as measured by the New England Comprehensive Assessment Program (NECAP) was compared across teams teaching 7th graders in Vermont. The NECAP scores were adjusted to control for household income within each school district. The independent variables of teaching team characteristics and practices were measured by a team self-assessment survey developed using dimensions of teaching teams identified by the Connecticut Association of Schools (CAS), an individual questionnaire completed confidentially about how team members work

together, and a survey for principals to identify demographic characteristics of each teaching team.

This study found: (1) teaching teams giving students greater roles in decision-making correlate positively with student performance in reading and mathematics; (2) teaching teams communicating with parents via email or website correlate positively with student performance in mathematics; and (3) three descriptors of internal teaching team dynamics are associated positively with student performance.

The study also found elements of teaching teams that correlate negatively with student performance. These include: (1) team identity including, motto, logo or mascot, mission, song, apparel, and team awards for students; (2) the extent of control teaching teams have over instruction; and (3) the use of student advisory groups. Finally, the study explored the impact of how teaching teams are formed (careful consideration does not impact effectiveness), the integration of a special education teacher on teams (negative impact on student achievement), and overall school size (schools with larger enrollments performed better).

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FRAMING THE ISSUE

Introduction and Perspective

"The importance of achieving developmentally responsive middle level schools cannot be overemphasized. The nature of the educational programs young adolescents experience during this formative period of life will, in large measure, determine the future for all of us" (Erb, 2001, p. 1).

In the 90s many researchers concluded that interdisciplinary teams of teachers working with students in middle grades 5–8 were more effective than traditional instruction in isolated disciplines. Team teaching positively affects student learning, behavior and achievement (Arhar, 1990, 1994, Arhar & Irvin, 1995, Erb, 1997, Flowers et al, 1999, 2000, Mertens et al, 1999). As a result, by 2000 over fifty percent of U.S. middle schools had implemented teaming as an organizational structure (Rottier, 2000). Will these changes in organizing instruction continue to prove beneficial given the new accountability requirements of the No Child Left Behind Act of 2002 (NCLB)?

With NCLB the use of data to assess individual student and whole school achievement is the standard practice for the school improvement process. All schools are now being held accountable for student performance in grades 3–8. The middle grades 5–8 cause policymakers and legislatures great concern because many state, national and international tests report low performance and decreases in academic achievement for this age group (U.S. Department of Education, 2002). As mandated by the law, every school must make annual yearly progress (AYP) towards the 2013 goal of

achieving one hundred percent of students meeting minimum performance standards in reading and mathematics. NCLB mandates that states establish student performance standards along with appropriate means for assessing student progress. The tests for measuring student progress must be criteria referenced and based on the state's grade level expectations for student performance.

> Following a lengthy process of public meetings formally held in all 256 towns, Vermont adopted the student performance standards in 1993. Under NCLB, Vermont schools will continue to be held responsible for students achieving these standards. To assess student progress, Vermont requires all students in grades 3-8 to take the New England Common Assessment Program (NECAP) exams in reading and mathematics. An additional NECAP writing exam is required in grades 5 and 8. These criteria referenced tests are designed to correspond to the *Vermont Student Performance Standards*. Rhode Island, New Hampshire and Vermont combined resources to design and implement the NECAP to meet the requirements of the NCLB Act.
>
> Vermont's additional requirement of math and writing portfolios for all students in grades 4, 8 and 10, encourages interdisciplinary instruction. In order to meet this requirement, most schools in Vermont have implemented writing across the curriculum. Interdisciplinary instruction is used occasionally for work on math portfolios.

Alexander recognized that while standardized achievement tests are relatively easy to understand and interpret, much less is known about numerous other factors that influence academic achievement. Among others, Alexander cites students' backgrounds, motivation, interests, instruction and school climate (Alexander, 2000). Many researchers have found that high functioning teacher teams positively affect instruction, student achievement and school climate (Flowers et al, 1999, Mertens et al, 1999, 2003).

The Problem

As a result of prior research and advocacy by professional associations committed to adolescent students, teaching teams are now common practice in our nation's middle schools. The problem is that educators do not know what specific elements and characteristics of teaching teams affect student performance. This study employed quantitative research methods to answer this question.

Purpose of the Study

The purpose of this quantitative study is to answer the question—What are the elements and characteristics of teaching teams that affect student performance? The study looks at eighth grade student achievement, as measured by the NECAP's criteria referenced exams for reading, mathematics and writing, to determine if student performance is related to exemplary teaching team practices. In addition, a school's status regarding the federal requirements for Adequate Yearly Progress (AYP) was used to find any correlations with various characteristics and practices of teaching teams.

Rationale

The power and influence of the school accountability movement combined with NCLB can no longer be ignored. Teachers who advocate for intellectually rigorous and developmentally appropriate middle schools must re-examine and perhaps redefine their best practices. Unless the public's obsession with test results is balanced and informed by research that identifies the key instructional factors contributing to student achievement, the nation's schools will not improve. This study examines one of the

basic tenets of the middle school movement—teaching teams improve student achievement.

Summary of Chapters

This chapter introduces the problem and provides a brief sketch of background and perspective. The purpose of this quantitative study is to answer the question—What are the elements and characteristics of teaching teams that affect student performance?

The second chapter reviews the prior research relevant to this question. It describes the normative models for teaching teams, the empirical evidence of what works for students and the conceptual theories related to team dynamics. These provide the foundation for developing the conceptual framework used to answer the question posed in the introduction.

Chapter 3 provides a detailed description of the quantitative methods used to examine the question. It defines teaching teams and the independent variables examined as attributes of teaching teams. This chapter includes the details required to replicate this study including sections on instrumentation, data collection, participant sample, and data analysis. This methods chapter concludes with ethical considerations, confidentiality and limitations of the study.

Chapter 4 lists the results of the study by the source of instrumentation. The second section reforms these findings into thematic clusters that will be discussed in Chapter 5.

Prior to an analysis of the findings, Chapter 5 describes the conceptual framework developed on the basis of the literature reviewed in Chapter 2. This

conceptual framework provides the lens to filter and interpret the findings and themes described in Chapter 4.

The last chapter reviews the implications of this study for policy, practice and research. After making recommendations for future theory, practice, policy and research, Chapter 6 closes with a brief summary of what this all means for middle level education.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This chapter reviews the historical and philosophical perspectives requisite to establish a basis for further research related to middle school teaching teams and student performance, and more specifically answer the question—In what ways do teaching teams affect student performance in middle schools?

The first section outlines the history of education reforms that led to the contemporary middle school model for effective instruction of adolescents. Following a review of three major documents calling for reform—*This We Believe* (1982, 1995, 2001), *A Nation at Risk* (1983), and *Turning Points* (1989, 2000)—a comparison of the essential characteristics of the traditional junior high school and modern middle school are described. The middle school model's emphasis on teaching teams for delivering instruction that is challenging, integrative, and exploratory is one of the most striking differences between these normative models. A discussion of the characteristics of teaching teams follows as well as a review of the research examining the effects of exemplary practice on student performance.

The next section addresses the *No Child Left Behind Act* of 2002, summarizing some of the immediate or anticipated affects of the federal requirements of this legislation on middle level education, with particular emphasis on best practices for teaching teams.

The final part, Concepts for Comparing Teaching Teams, examines how other researchers, business leaders and professional organizations gauge team functioning. This review will inform a more specific look at the characteristics of teaching teams in middle schools. Five professional associations for middle level education have created instruments that compare the level of functioning of teaching teams following the middle school model. These are analyzed and synthesized to determine the best way to conceptualize the extent and quality of team functioning. This synthesis will be used to construct an instrument necessary to address the question proposed.

Historical Background Related to Middle Schools

For the greater part of the last century, a nearly constant call for educational reform challenged the nation's schools to improve. Established and sustained by the communities they serve, public schools reflect the traditional mores and values of their communities, and respond to changes and aspirations of the greater society (nation and world). Contemporary middle schools have evolved in response to political and social change, and remain in transition as they strive to meet the educational needs of our youth.

The middle school movement's philosophical roots may be traced to John Dewey's call for reforming the classical high schools of the late 19th century. Dewey believed that all citizens would benefit from a high school education that emphasizes the practical application of classes to working skills and gainful employment. A democratic society depends on all its citizens to be literate and sufficiently informed to vote and participate fully in the economic, social and political life of the nation. As the United States transitioned from an agrarian to industrial economy and coped with a massive

influx of immigrants, Dewey's ideas won public favor and were broadly implemented. His emphasis on a universal education of practical value both to the individual and community remains a hallmark of middle schools today.

Before World War II, most students attended grades 1–8 in elementary schools and grades 9–12 in high schools. This model apparently satisfied the nation's need for providing factory and farm workers with a basic elementary education. Beginning in the 1920s high school graduation rates rose steadily from just over twenty percent to nearly thirty percent, reaching fifty percent by 1940 (Morey & Salisbury, 2000). This trend continued as the post war economy required a more highly educated labor force. During the same period, most urban school systems dealt with increasing student populations by restructuring their K–12 instruction to include junior high schools. Instead of building new junior high schools, many districts placed junior high students in the old high school buildings and built new high schools.

The term junior high school, used historically from circa 1880, usually denotes grade configurations of 7–8 or 7–9 in which the program approximates the type of education commonly found in high schools, but on a junior level (Hough,1989). The junior high was viewed as a bridge between the self-contained elementary schools and the traditional departmentalized high school. Junior high schools for grades 7–9 were conceived to better prepare students for high school classes and increase graduation rates. In his essay, "Why Middle Schools?" Donald H. Eichhorn claims:

> The junior high was one of the most remarkable innovations in the history of education. In this noble experiment, the ninth grade was placed with the seventh and eighth grades. Ninth grade retained its high school status by necessity, as ninth grade students continued to earn Carnegie Units necessary for graduation. The seventh and eighth grades remained quasi-elementary, and school activities occurred

> mainly in the ninth grade and were patterned after the high school program. [Capelluti & Stokes, 1991, p.1]

Eichhorn's description of junior high school became the prevailing model for middle level education in most urban and suburban school districts in post World War II America. The post war baby boom brought economic growth and prosperity, which put greater demands on the nation's school system. As the baby boom parents' ambitions and expectations for their children grew, they realized the good life required more education. As a high school diploma became a minimum expectation, educators began to question the effectiveness of the junior high model. Bossing (1954) characterized the junior high schools as small imitations of the senior high schools and urged educators to consider more far reaching improvements.

Calling for school improvement in *The Modern Junior High School,* Gruhn and Douglass (1956) articulated six functions of intermediate schools to meet the needs of their students; integration, exploration, guidance, differentiation, socialization, and articulation. These six functions established many of the principles on which middle level education in the United States is currently based. Both *Turning Points 2000* and *This We Believe* refined and expanded on these fundamental six functions in advocating for the reform of middle level education to meet the needs of adolescents.

In 1959, Sputnik I demonstrated the Soviet Union's technical superiority in space. As Americans marveled at this orbiting man-made wonder, education became a national priority. The competition of the space race placed new emphasis on mathematics and science. This had a tremendous impact on the middle level schools. Subjects were moved downward in grade level—e.g., algebra classes were moved from grade nine to grade eight; biology, chemistry, and physics were moved one grade lower.

Foreign languages, usually offered in the high school, became part of middle level programs. Teaching strategies emphasized a hands-on problem solving approach.

The Emergence of Three Normative Middle School Models for Best Practice

A Nation at Risk

Despite public interest and concern, for the next two decades educational researchers could not agree about the best model for teaching grades 7–9. Discussion of the merits of the junior high versus middle school models was largely limited to academic researchers and practitioners until President Reagan and Education Secretary Bell appointed a special commission to report on U.S. schools. The commission's report, *A Nation at Risk,* heightened the public's awareness of gaps in the United States' system of education. "Our nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world" (National Commission on Excellence in Education, 1983, p. 5).

Political pressure to reform the nation's public schools increased dramatically in 1983 with the publication of *A Nation at Risk.* In language reminiscent of Horace Mann, this document declares that, "A high level of shared education is essential to a free, democratic society and to the fostering of a common culture, especially in a country that prides itself on pluralism and individual freedom" (National Commission on Excellence in Education, 1983, p. 7).

In defense of democracy, *A Nation at Risk* underscored the importance of two principles—equity and quality.

> We do not believe that a public commitment to excellence and educational reform must be made at the expense of a strong public commitment to the equitable treatment of our diverse population. The twin goals of equity and high-quality schooling have profound and practical meaning for our economy and society, and we cannot permit one to yield to the other either in principle or in practice. [National Commission on Excellence in Education, 1983, p. 13]

The commission's call for universal educational excellence was paramount. "Our goal must be to develop the talents of *all* to their fullest" (National Commission on Excellence in Education, 1983, p. 13). This call for *all* students to realize the full benefits of a high educational standard is consonant with those found in *This We Believe (1982, 1995, 2001)* and *Turning Points (1989, 2000).* Congress reiterated this goal in passing the No Child Left Behind Act of 2002.

This We Believe

In 1982 and a year earlier than *A Nation at Risk*, the National Middle School Association (NMSA) issued a position paper on the education of the young adolescent—*This We Believe*. In response to teacher demand, *This We Believe* was revised in 1995 and again in 2001. In *This We Believe: Developmentally Responsive Middle Level Schools*, NMSA defined six major elements or program components that would together create the kind of schools young adolescents need and deserve. The most recent edition, *This We Believe and Now We Must Act,* updates practitioners on the latest research pertaining to this vision. It calls for schools and the public supporting them to change their views of adolescents.

> Successful middle level schools are grounded in the understanding that young adolescents are capable of far more than adults often assume… (They promote) ways to help students realize their potential in every realm of development…The importance of positive expectations is magnified with regard to young adolescents because of the negative stereotypes that abound about them in our society…Predominant negative stereotypes are based largely on media images and psychiatric accounts of disturbed youth. They fail to realize that while puberty is undeniably a biological phenomenon, "adolescence" as we know it today is to a great extent the result of social forces that have increasingly isolated young people from the adult world and have created a youth culture. The starting point for high expectations and developmentally responsive middle schools, then, is ridding ourselves of negative stereotypes about young adolescents. [Erb, 2001, p. 28-29]

Turning Points

In response to *A Nation at Risk,* The Carnegie Council on Adolescent Development sponsored research to inform educators and the public specifically about conditions in the nation's middle schools. The report of its findings and recommendations, *Turning Points,* was first published in 1989 and revised in 2000.

Anthony Jackson authored the first report—*Turning Points: Preparing American Youth for the 21st Century*. In this work he identifies "a volatile mismatch between…the organization and curriculum of middle grades schools, and the intellectual, emotional and interpersonal needs of young adolescents" (Jackson, 1989, p.32). In response *Turning Points* calls for significant reforms. "The middle grade school proposed here is profoundly different from many schools today. It focuses squarely on the characteristics and needs of young adolescent" (Jackson, 1989, p.36).

Jackson joined with Gayle Davis to write *Turning Points 2000: Educating Adolescents in the 21st Century,* which expands and elaborates on the earlier Carnegie report. The 2000 revision recapitulates and builds on the eight essential principles for

improving middle grades education from *Turning Points* (1989). These principles provide the first whole school model of high quality education for young adolescents:

1) Large middle grades schools are divided into smaller communities for learning.
2) Middle grades schools teach a core of common knowledge to all students.
3) Teacher and principals have the major responsibility and power to make decisions about young adolescents' schooling.
4) Middle grades schools are staffed by teachers who are experts at teaching young adolescents.
5) Schools promote good health; the education and health of young adolescents are inextricably linked.
6) Families are allied with school staff through mutual respect, trust and communication.
7) Schools and communities are partners in education young adolescents. (Jackson & Davis, p. 2)

These two publications—*Turning Points: Preparing American Youth for the 21st Century* and *Turning Points 2000: Educating Adolescents in the 21st Century*—are guidebooks for communities to create developmentally responsive middle schools following the twin principles of quality and equity.

The 2000 edition of *Turning Points* made one minor word change that could be over looked, but warrants special attention. The document calls for challenging and developmentally appropriate curriculum and instruction for every student. *Every student* was substituted for *all students* used in the 1989 edition because too often *all* students can be translated into *most* students. The authors wanted school officials to avoid this misinterpretation (Jackson & Davis, 2000, p. 30).

This change anticipated the equity requirements of the No Child Left Behind Act. Together with *This We Believe, Turning Points* provides guidance to those who are not satisfied with public education at the middle grades level. Both documents examine

the entire school experience of young adolescents, including the social as well as the intellectual development of every child.

The principles NMSA articulated in *This We Believe* parallel those called for by the Carnegie Foundation in *Turning Points 2000.* In Table 1 the first two columns compare the two sets of principles that guide developmentally appropriate schools to educate young adolescents. While these design elements and characteristics can be viewed as parallel lists, they should also be viewed as interconnected webs (Erb, 2001). The third column reveals my synthesis of the elements and characteristics of the middle school model. My adaptation of Erb's comparison reveals seven dimensions of excellence in middle level education.

Comparing Junior High and Middle Schools

Junior high and middle schools have more in common philosophically than they differ. The seven elements in *Turning Points* and the twelve characteristic of effective middle level education in *This We Believe* can be viewed as reiterations of the six functions of *The Modern Junior High School.* This is not surprising since the goals of the two models are the same: to educate adolescents in preparation for further studies.

Table 1. Seven Dimensions of the Middle School Model

Turning Points Design Elements	*This We Believe* Characteristics	Seven Dimensions
1. Teach a curriculum grounded in standards, relevant to adolescents' concerns, and based on how students learn best; and use a mix of assessment methods.	1. Curriculum that is challenging, integrative, and exploratory. 2. Assessment and evaluation that promote learning.	1. Curriculum and Assessment
2. Use instructional methods that prepare all students to achieve high standards.	3. Varied teaching and learning approaches.	2. Differentiated Instruction
3. Organize relationships for learning.	4. Flexible organizational structures. 5. An adult advocate for every student. 6. Comprehensive guidance and support services.	3. Student Counseling and Support
4. Govern democratically, involving all school staff members.	7. A shared vision. 8. High expectations for all. 9. Positive school climate.	4. School Culture
5. Staff middle grades schools with teachers who are expert at teaching young adolescents and engage teachers in ongoing professional development.	10. Educators committed to young adolescents.	5. Philosophical Commitment to Adolescents
6. Provide a safe and healthy school environment.	11. Programs and policies that foster health, wellness and safety.	6. Health and Safety
7. Involve parents and communities in supporting student learning and healthy development.	12. Family and community partnerships.	7. Community Connections

Note. The information in columns 1 and 2 are from *This We Believe and Now We Must Act* (p. 3), by T. O. Erb (Ed.), 2001, Westerville, OH: National Middle School Association. Reprinted with permission.

One distinction is that the middle school model places great emphasis on the belief that every student can learn and be successful. Although this difference in philosophy may be significant, many teachers in either model hold beliefs to the contrary. The more obvious and distinguishing differences stem from each model's structure and organization for teaching and learning.

The traditional junior high school organizes instruction by departments according to academic subjects or disciplines such as mathematics, English, social studies and science. Teachers in junior high schools focus their planning and instruction primarily on the content of their respective disciplines. Little or no effort is made to connect their subject and lessons with those of their colleagues. The structure and philosophy of these schools for young adolescents are literally junior versions of the classic high schools of the 19th century (McPartland, 1987). While this approach to educating early adolescents was considered progressive for most of the 20th century, *A Nation at Risk* called attention to the fact that U.S. schools were not meeting the educational needs of the nation's youth.

Many educators heeded this call by reforming their schools according the guiding principles of *Turning Points* and *This We Believe*. At the same time, middle school administrators and teachers formed professional organizations in all fifty states. As a result, membership in the NMSA grew significantly. The middle school movement spread establishing international affiliates to the national association. In New England, a regional association formed: the New England League of Middle Schools (NELMS). NMSA, NELMS and their state affiliate associations all sponsor workshops and conferences to assist educators who seek to implement the principles articulated in *This We Believe* and *Turning Points*

Alexander (1984) offers two overriding reasons for the establishment of middle schools: (a) the earlier maturation of girls and boys during the middle school years, with related, increasing concern about the traditional program's match with the needs of that age group, and (b) local problems of buildings, enrollments, desegregation, and other

such matters. Of these, most could be addressed by junior high schools as well. What made middle schools attractive was their commitment to the affective domain of instruction by developing students' relationships and a sense of belonging to a school community.

Converted junior high schools often changed their names to *middle schools* to emphasize their new philosophy and organization for teaching and learning. The most obvious difference for students, parents and staff is that a middle school is divided into interdisciplinary teams of teachers who plan their work together. These teaching teams are responsible for curriculum planning and instruction, as well as the social development and learning of every student member on the team. This commitment to educating the whole child distinguishes most middle schools from junior high schools that are instructionally organized by departments according to subject discipline.

Teaching teams are able to act on their commitment to the academic and social development of the whole child. Teams implement the integrative curriculum called for in *This We Believe* by using thematic units for instruction. The teachers on a team often meet regularly with small groups of students as advisors. Advisory groups are another distinguishing characteristic of middle schools designed to strengthen personal relationships among students as well as between student and teacher. Without highly functioning teaching teams and advisory groups, a middle school is probably functioning as a traditional junior high school and instruction is likely to be isolated by discipline with a fixed daily schedule for classes. The teachers on a team meet regularly to confer with students and parents, or to plan interdisciplinary instruction. Teaching teams work

with a high degree of autonomy and often adapt the daily schedule to support more effective instruction that is challenging, integrative and exploratory.

Do these distinguishing differences between junior high schools and middle schools produce significantly different results? Is one model better at fostering academic achievement, desirable student behavior, and a higher quality of student life? A review of the literature found that the results of research attempting to answer these questions are equivocal.

A major impediment to conclusive research has been the absence of clear and common definitions for the variables examined across the many studies. The researchers in this field have little control over the variables since the distinguishing characteristics of junior high schools and middle schools are not consistently realized in all settings. There is even less consensus among researchers on the definition of dependent variables or the measurement of outcomes such as student achievement or desirable student behavior. These factors account for the abundance of contradictory research and the lack of convincing evidence that one model is better than the other.

The apparently contradictory conclusions of early comparison studies illustrate the problem with research in this area. Trauschke (1970) compared the attitude and achievement of students in a middle school with those in a junior high and two elementary schools. He concluded that the students in the middle school had more favorable attitudes toward school, themselves, other students and teachers. After two years in the middle school, seventh and eighth grade achievement was higher for the middle school students than for the junior high students in the same grade.

In a study of the Fort Worth public schools, Evans (1970) found that middle school students scored higher than junior high students in reading and study skills, but lower in math. At the same time in a Florida high school Mooney (1970) found no difference in the achievement of ninth grade students who graduated from junior high schools compared with those who graduated from middle schools.

Another small study by Smith (1975) compared two Ohio junior high schools, one of which employed middle school concepts—interdisciplinary team teaching, grouping of students based on needs, team planning for teacher, a thematic teaching approach, a discipline program managed at the team level, and an advisor-advisee program. The students in the middle school building scored higher in reading and mathematics than did students in the junior high school that used a more traditional approach, i.e., departmentalization, non-thematic teaching, grouping by age, and individual teacher planning only.

These contradictory findings do not support any conclusions regarding middle schools vs. junior high schools. Not only do these studies lack common definitions for the two models, none measured the degree to which each model was implemented. In separate work, Mooney and Evans provide another example of these confounding design flaws when they considered student attendance as a dependent variable. Mooney (1970) found attendance in middle schools was significantly greater than in regular schools with similar demographic profiles, while Evans (1970) found no difference in attendance rates when comparing both models. These results indicate more carefully designed research is needed to determine what factors in either model affect student outcomes such as attendance.

Another factor complicating the middle level research is that school districts establish middle schools with widely varying grade levels. The grade level configurations of the schools in a district are often determined by the size of the buildings and facilities available. Curriculum and instruction are rarely the primary determining factors (Alexander, 1984). As a result, junior high schools or middle schools come in various grade configurations including 5–8, 6–8, 7–8, and 7–9. Epstein and Mac Iver (1989) found that there are 30 different grade level configurations for schools that include grade seven.

Fortunately, how schools configure their grade levels of instruction has little effect on middle level student performance. An exhaustive literature review conducted by the Educational Research Service on middle level education concluded; (a) grade organization has no apparent effect on the organizational climate of the schools, and (b) researchers agree that the quality of the program is more important than its grade organization (Calhoun, 1983).

Although the grade levels involved are of little consequence, the organization of the middle level school must reflect its purposes. Recognizing the uniqueness of the middle level student is critical. A study by the state of Maine, *Schools in the Middle: Report of the Middle Level Task Force*, found that the mission of the school and what takes place in the school are more important then the physical plant and the grade level configuration (Maine Department of Educational and Cultural Services, 1988).

Characteristics of Middle Schools that Affect Student Outcomes

Inter-disciplinary teaching teams and advisory groups are two elements of the middle school model that contribute to a sense of ownership and commitment on the part of the people who work and learn there. These elements are not characteristic of junior high schools. Over the last decade, a number of researchers found that interdisciplinary instruction emphasizing themes that integrate student learning across subject lines improved student engagement and academic performance. Arhar and Irvin suggest that less departmentalization is positively associated with student achievement, student engagement and reduced discipline problems (Arhar & Irvin, 1995). In a 1994 study of 9,000 eighth grade students in 377 schools, Lee and Smith (1993) found that schools with team teaching were positively associated with higher student achievement and engagement.

In two large-scale studies, one conducted in 1985 and a follow-up study in 1993, middle school administrators across the country responded to written surveys to determine the extent of implementation of the middle school concept. The elements of middle school implementation surveyed included teaming, flexible scheduling, advisory groups, and school climate. In the 1993 survey, a majority of the schools reported implementation of most of the middle school concepts. The principals in this survey also reported that when effectively implemented the middle school concept leads to positive outcomes. These included; (a) improved academic achievement, (b) improved attendance, (c) lower rates of disciplinary problems, and (d) improved relationships between and among students, teachers, and parents (George & Shewey, 1994). This same group of principals also reported that interdisciplinary organization of the teachers

by teaching teams was the most important element of effective middle school implementation.

The trend favoring the teaching team approach to instruction for the middle grades continued. By the year 2000, more than fifty per cent of all middle level schools in the United States had incorporated teacher teaming as the basic organizational structure for instruction (Rottier, 2000).

There are a number of reasons for the increased use of teaching teams for middle level instruction. Flowers and her colleagues examined the impact of interdisciplinary teacher teams in middle schools. They found that teaming improved the work climate and increased parental contact, job satisfaction and student achievement (Flowers et al., 1999).

Flowers and her colleagues are researchers at the Center for Prevention Research and Development (CPRD) at the University of Illinois at Urbana-Champagne. The CPRD was contracted to assess what effects the Middle Start Initiative had on participating schools. This initiative was launched in 1994 by the Kellogg Foundation to "demonstrate that schools and teachers could improve middle grades instruction" (Mertens, et al, 1999, p. 1). The Kellogg Foundation funded two projects—one in Michigan and another based in Jackson, Mississippi—that included schools in Arkansas, Louisiana and Mississippi.

In Michigan, all schools having a seventh grade and one other contiguous grade were eligible to participate in the Middle Start Self-Study. The Middle Start Initiative provided grants, technical assistance, networking support and professional development to a subgroup of Michigan's middle schools having forty percent or more of its students

eligible for free or reduced priced lunch. Of the 155 schools surveyed in both rounds, first in 1994–95 and then again in 1996–97, twenty-one received comprehensive school improvement grants. The analysis of the data compared the progress of the subgroup of schools receiving grants and taking advantage of other supports from the initiative program with a subgroup of all other middle schools. In this large study, over 3,300 teachers completed self-study surveys with over 34,000 students surveyed in both rounds.

Over the two-year period, the grant schools made dramatic progress in improving student performance in mathematics and reading. As measured by the Michigan Educational Assessment of Progress (MEAP), seventh graders in the grant schools improved their scores in reading by ten percentage points and in mathematics by six percentage points. Grant schools engaged in team teaching and that had high levels of planning time (at least four 30 minute meetings per week) showed the greatest improvement in MEAP scores (+14 in reading and +9 in mathematics). In addition, this study found grant schools that maintained teaching teams with constant levels of common planning time for five years or more had the highest MEAP scores (Mertens et al., 1999).

Reports on the Middle Start Initiative Mid South sample—involving schools in Arkansas, Louisiana and Mississippi—do not corroborate the effects of team teaching on student performance as a single independent variable. In high poverty, "the simple existence of teams and common planning time in a school does not guarantee a positive impact on student achievement" (Mertens & Flowers, 2003, p. 39). Mulhall (2002) and a team of researchers used data obtained from state achievement tests of Arkansas,

Louisiana, and Mississippi to examine the relationship among interdisciplinary practices, classroom practices, and student achievement in high poverty schools. This study of 32,000 students in grades six, seven and eight parallels research in Michigan also funded by the Kellogg Foundation. Mulhall linked self-study data he gathered from parents, students, teachers and administrators to local and state achievement test scores. In his executive summary, Mulhall urges practitioners to recognize that a number of factors influence student achievement such as educational expectations, academic efficacy, self-concept, parent involvement, and number of books read per year. He concludes, "Although student achievement scores will remain the primary, if not sole indicators...[student achievement] scores will provide a limited understanding of potential causes, processes, and solutions for improving student achievement for differing student groups" (Mulhall et al., 2002, p. 5).

A number of variables influence the effectiveness of teaching teams. When examining team size, two dimensions should be considered; the number of students, and the number of teachers. According to NMSA, middle school teams range in size from two teachers and 40–60 students to teams of six teachers and 150–190 students. Although the number of teachers on a team varies, smaller teams work more effectively (Bishop & Stevenson, 2000). Two or three person teams have fewer dimensions of personal and professional relationships to develop. They can resolve differences, come to decisions more quickly, and have to consult less before changing strategies to implement any team plans or initiatives. A more recent study found that no particular combination was more effective when considering the number of teachers on a team (George &

Alexander, 2003). While the conclusion of the earlier study is logical, George and Alexander's work leaves the optimal number of teachers on a team still in doubt.

Studies considering the optimal number of students on a team have usually considered student-teacher ratios. One study found that teams of 120 or fewer students with a ratio of no more than twenty-five students to one teacher engaged in instructional practices that were linked to positive student outcomes more often than larger teams (Erb & Stevenson, 1999). The Michigan Middle Start study grouped teams into three size categories; 90 students or less, 91–120, and 121 or more. Comparative analysis of these groups found that teams with fewer students more frequently engaged in team activities than teams with more students (Flowers et al., 2000).

The teaching team concept makes larger schools seem smaller and more manageable for both students and staff. Regardless of the overall size of the school, teaching teams help develop caring relationships and a sense of family, countering the anonymity of a large school with a sense of belonging. As teachers plan to meet the instructional and social needs of their students, both students and staff develop a respect and support system for individual difference (Arhar, 1994). This sense of family and belonging is enhanced by the team's capacity to personalize instruction and learning. Teams break down curricular walls between subject classes by planning for interdisciplinary instruction. This approach also supports student demonstrations of learning by means of exhibitions and presentations.

Teaching teams provide challenges and opportunities that teachers find professionally satisfying. This satisfaction is related to the degree of autonomy enjoyed by the team. Ingersoll's analysis of teacher turnover supports the need to create more

supportive working conditions for teachers, which includes allowing teachers to influence decisions that affect their classrooms—a recommendation of *A Nation at Risk* as well (Ingersoll, 2001).

The Effects of No Child Left Behind on Middle Schools and Teaching Teams

Having examined the rise of teaching teams in the context of middle level education, it is critical to survey the implications of the federal government's latest initiative for school reform. The No Child Left Behind Act of 2001 (NCLB) is consistent with the same values of quality and equity articulated in *A Nation at Risk, This We Believe* and *Turning Points*, but ignores the middle grades as a distinct instructional entity. The act addresses public education solely in terms of elementary schools (K–6) and high schools (7–12). This oversight by NCLB represents a real setback for middle school teachers and administrators striving to improve student performance.

In *This We Believe,* NMSA advocates for teaching teams unequivocally. "The interdisciplinary team of two to four teachers working with a common group of students is the signature component of high-performing schools, literally the heart of the school from which other desirable programs and experiences evolve" (National Middle School Association, 2003, p. 29). Rather than support the development of effective teaching teams, NCLB has made it more difficult to maintain teaching teams. Although the states retain the responsibility for teacher licensure, NCLB set clear guidelines calling into question some states' requirements for a middle level teaching license. NCLB requires that all teachers be highly qualified in the subject content of the classes they teach. For

example, a teacher of mathematics in grades 7–12 must have a bachelor's degree in mathematics.

This requirement is neither practical nor pedagogically advisable for instruction in the middle grades 7–8. Effective middle schools depend on teaching teams that often require teachers to teach in more than one subject. Unless the members of a teaching team are licensed in every subject they teach, the team and the school are out of compliance with the law. A strict interpretation by the states of NCLB's requirements for highly qualified teachers may force some schools to return to the junior high school model of departmental instruction isolated by subject.

The problem of maintaining qualified teaching teams is exacerbated by the teacher shortage in subjects, such as mathematics, science and special education. While the goal of NCLB to eliminate unqualified teachers from the nation's classrooms is commendable, the law provides few resources to help the states find or train highly qualified replacements. Pam Grossman at Stanford's School of Education predicts that the teacher shortage is likely to continue. "Due in part to the reforms enacted in response to *A Nation at Risk*, it is harder than ever to get into a teacher education program" (Grossman, 2003, p. 1).

Demands to hire only those teachers who meet the requirements of NCLB places middle school principals between a rock and a hard place on the road to improving student performance. The best teacher applicants to fill vacancies on teaching teams are both highly qualified in multiple disciplines able to teach effectively to meet the developmental needs of students 10–14 years of age. Unfortunately, such applicants are in short supply. Promising student teachers who appreciate the strengths of team

teaching and interdisciplinary instruction are not likely to undertake the additional effort and expense to become highly qualified in more than one discipline.

An obvious solution to the nation's teacher shortage would be to reduce requirements for licensure. In the 2002 report, "Meeting the Highly Qualified Teacher Challenge," the U.S. Secretary of Education essentially calls for the abolition of professional teacher education as it currently exists. The report concludes that states should cease requiring traditional teacher education. Instead, states will need to reduce "barriers to becoming a teacher among otherwise highly qualified individuals by retooling traditional teacher education programs and open up alternative routes to teaching" (U.S. Department of Education, 2002, p.2). This U.S. Department of Education proposal ignores research on teacher preparation concluding that courses in how to teach a subject contribute more to a teacher's success than additional subject-matter courses (Wilson, Floden & Ferrini-Mundy, 2001). Effective teacher preparation for the middle grades requires both subject knowledge and developmentally appropriate instruction.

If the nation is to realize the benefits of NCLB's primary goal to hold public schools accountable for student performance, middle schools will need teachers who are highly qualified in multiple disciplines and able to meet the developmental needs of adolescents. All students will be tested annually in reading comprehension, writing and mathematics. Students who do not perform adequately should not be promoted or permitted to graduate. These requirements of NCLB are commonly referred to as a mandate for high-stakes testing. In addition, the test results must be disaggregated to

reveal gaps in achievement by groups of students according to gender, race, disability and economic status when compared to the general student population.

Both *Turning Points* and *This We Believe* support NCLB's mandates for rigorous standards and universal accountability. The two principles of quality and equity are common to all three calls for education reform—*A Nation at Risk, Turning Points* and *This We Believe*. The NCLB requirement of standards-based tests rather than norm-referenced tests holds schools accountable for providing both quality and equity: a high standard of performance for every student. On a standards-based test, every student can achieve the desired performance outcome, the standard. A norm-reference test is designed to compare one student's performance with that of all other students taking the test. Standards-based tests are better suited to make schools accountable for the primary goal of NCLB that all students must achieve high standards. *Turning Points* clearly reinforces this position calling for the use of instructional methods that prepare all students to achieve high standards. Similarly, *This We Believe* calls for high expectations for all students as well as assessment and evaluation that promote learning.

With the full implementation of the NCLB testing requirements, the public can now compare the standards-based test scores of every school in the state and nation. Promoters of the new law envision parents choosing the best school for their children based on the common indicator known as a school's adequate yearly progress (AYP). AYP references the school's progress towards the NCLB requirement that all of a school's students will meet or exceed the state's standards by 2013. Parents may consider relocating their families based on a comparison of schools' test scores or AYP's. A school that meets its AYP goals on the required tests is considered a good school,

while the school that does not is considered at risk or failing. If a school continues to fail to make adequate yearly progress, it may be taken over by the state.

Teaching teams in middle schools may be threatened by NCLB's singular focus on standards-based testing, especially if the tests make no effort to assess interdisciplinary concepts and understanding. As parents focus on test results in reading and mathematics, other forms of student assessment will lose credibility and support. In June 2004, a publication to inform Vermont educators about statewide assessments advised, "Testing experts like Jim Popham, Professor Emeritus at UCLA, tell us that our best defense against faulty test results is to use many independent measures to determine what students know and can do" (Meyer, 2004, p. 1). In *Test Better, Teach Better,* Popham advises teachers, "diverse assessment tactics will not only help you better understand what each content standard is really seeking, but will also provide you with instructional clues about how best to get your students to master each content standard in a generalizable manner" (Popham, 2003, p. 26).

In 1996, the Vermont Board of Education established the Comprehensive Assessment System calling for multiple measures. This system calls for statewide standards based tests in reading, English/language arts, mathematics and science. At the school level, it called for portfolios, student projects and performances, teacher made tests for the classroom, as well as standardized tests from other states that assess the arts, social studies, foreign languages, technical education, health and physical education. NCLB makes "no provision for increasing support for local assessments or for providing state assessments in other areas of the curriculum" (Meyer, 2004, p.2). Despite this new reality, Vermont's Department of Education no longer requires, but encourages local

districts to continue to include math and writing portfolios as part of their local assessment programs. Although portfolio work is widely believed by teachers to be a more complete measure of student performance, education officials at the federal level judge portfolio assessment programs too expensive and cumbersome to implement in a manner that provides reliable and objective assessment data.

Many educators criticize the NCLB high stakes testing approach to improving the nation's public schools as being either too narrow in scope, counterproductive, or naïve at best. Among these critics Rick Stiggins lends some reasoned perspective to the standards and testing debate. According to Stiggins, we have entered a new era of testing in which the effective use of assessment should not merely check for student learning, but also benefit the student and teacher. "The mistake we have made at all levels is to believe that once-a-year standardized assessments alone can provide sufficient information and motivation to increase student learning" (Stiggins, 2004, p. 22). This mistaken belief has "forced educators to approach standardized testing far more as a matter of compliance with political demands for test scores than as a matter of pedagogy" (p.23). Stiggins challenges schools to establish a balance between standardized tests <u>of</u> learning and classroom assessment <u>for</u> learning. Assessments <u>for</u> learning inform instructional decisions along the way to student success. Standards-based tests provide periodic evidence of student mastery of the standards themselves. They verify the student's arrival at success, but do little to inform instruction and learning (Stiggins, 2004).

Turning Points 2000 reinforces this crucial and dynamic role of assessment. As an essential element of middle level education, assessment should be the midpoint of instructional design and should provide ongoing feedback to the students and teachers.

"It should be used to improve both teaching and learning progressively". "Effective assessment should connect directly to curriculum and instruction...perfectly meshed to what we want students to learn" (Jackson & Davis, 2000, p.54). *This We Believe* also supports this formative approach to testing. In an effective middle school, assessment and evaluation promote learning continuously informing the teacher and learner (Erb, 2001).

To help students achieve, "ultimately, what will make the difference is not the standards themselves, but the self-efficacy of the staff—their belief that it is within their sphere of influence to impact student achievement in a positive way" (DuFour, 2004, p. 182). To develop this requisite self-efficacy, DuFour suggests "teachers work *together* to clarify outcomes, establish common formative assessments, gather frequent information on the achievement of their students and share their findings with one another" (p.185). This describes a collaborative learning process among professional colleagues determined to improve their teaching.

Enabling all students to meet high standards is also the goal of Dennis Littky's work to revitalize education. In his latest design for secondary school reform, *The Big Picture,* Littky (2004) challenges schools to engage students in authentic learning experiences culminating in exhibitions to demonstrate achievements in meeting rigorous standards. He views statewide tests as irrelevant and ineffective at best, and at worst, an impediment to academic excellence.

Supporters of NCLB counter that high stakes testing for all students is necessary to hold schools accountable and stimulate significant reform. Poor test results provide a powerful rationale for additional or re-allocated resources to support education. The

success of any reform depends on the time and money devoted to accomplish the desired change. In order to meet the quality and equity goals of NCLB, all states require schools to design and implement action plans for improving student performance on the state's standards-based tests.

For example, Vermont 's recent education and tax reforms—Act 60, 1997 and Act 68, 2004—require every school to have a publicly approved plan that sets goals and action steps for improving student performance. Act 60 stipulates that progress on the school's goals must be measurable and data-driven. Each school must provide an annual report to inform the public of its progress.

This and similar accountability procedures in other states, place a heavy emphasis on test scores. As a result, the decision-making process for allocating resources within a school or school district will be dominated by student performance on the state's standards-based tests. State and local boards of education may encourage schools to consider additional measures of student achievement. Unfortunately, these alternative indicators such as student grade point average (GPA), honor roll status, attendance and high school completion rates do not provide useful data for directly comparing schools, because for each variable, the meaning of the indicator and the criteria for measuring it may differ among schools. The ability to compare schools quickly and objectively is essential to NCLB's primary goal to hold schools accountable to the parents and taxpayers. As a result, student performance on state tests will likely dominate school budget debate, approval and implementation.

The high stakes testing approach to improving schools also affects curriculum and instruction. State and local officials will have to make tough choices as their schools

struggle to meet the AYP requirements of NCLB within the means provided by publicly approved budgets. Mathematics, reading and writing will have an advantage over other areas of the curriculum that are not subject to state assessment. These subjects including; art, music, drama, physical education, health, and the practical arts, may be neglected. School resources will be focused on the more important areas of the curriculum.

NCLB's emphasis on high stakes testing may narrow not only a school's curriculum, but a teacher's instruction as well. According to Grossman (2003), a researcher at UCLA, "districts around the country have begun investing in a variety of scripted curriculum materials" in order to insure improved student performance in reading and mathematics (p. 3). A script for instruction can be attractive to both administrators and new teachers because it provides uniform quality and equity in all classes, but "highly accomplished teachers may find themselves increasingly stymied in their efforts to meet the needs of individual children" (Grossman, 2003 p. 3-4).

Any narrowing of curriculum and instruction is contrary to the precepts of both *Turning Points* and *This We Believe.*

> All of what has been learned affirms an essential truth about education: Improvement in student performance across all groups requires a relentless focus on the her of schooling—that is, on teaching and learning…We have moved away from the term "core of common knowledge" because it implies a prescribed, fixed universe of knowledge, a concept inappropriate for the information age. It also ignores the skills and habits of mind that student should also acquire, the changing concerns of young adolescents, and the growing understanding of how students learn best. We now recommend teaching a curriculum grounded in rigorous, public academic standards, relevant to the concerns of adolescents, and based on how students learn best. (Jackson & Davis, 2000, p. 31-2)

Conceptual Theory

Frameworks for Comparing Teaching Teams

The first section of this chapter outlined the historical background of education reforms leading to the contemporary middle school model for effective instruction of adolescents. This normative model and related empirical studies emphasize the crucial role of teaching teams in meeting adolescents' needs for intellectual and social development, but how do they affect student performance? Answering this question requires a means for comparing teaching teams and their function.

What is the best way to conceptualize the extent and degree of team function? Given that teaching teams are infinitely variable, further research on the effectiveness of teaching teams requires a comparative measure of the level of functioning as a team. If properly designed, this instrument would permit correlative studies considering a variety of student outcomes such as academic achievement, attendance, school completion and behavior. This section reviews the work of Matusak, Lencioni, Rottier, Bales and Walton on team building and function. Their perspectives lend insight to any teacher team working to reach a common goal.

Matusak and the Four Stages of Team Building

Matusak (1997) based her work on the earlier research of Tuckman (1965) and Scholtes (1988). They contributed to her concept of teams and the four stages of team building—forming, storming, norming and performing. Matusak believes all teams evolve through these four developmental stages of team building (Table 2).

Table 2. Matusak's Four Stages of Team Building

Stages of Team Building	Characteristics
1. Forming Stage	Members wonder how they fit. Do they belong? Can they trust each other?
2. Storming Stage	Members try to overcome their person likes and dislikes of people on the team.
3. Norming Stage	Trust and respect are achieved. Creativity abounds because everyone feels valuable, listened to and accepted.
4. Performing Stage	Like a superb orchestral performance, a perfect balance between the individual excellence and team harmony.

Note. From *Finding Your Voice,* by L. R. Matusak, 1997, San Francisco, CA: Jossey-Bass.

Teachers working on teams can easily relate to Matusak's description of the four stages of team building. While teaching teams aspire to be working at the highest level, some teaching teams may never realize the performing stage. Those that do, find consistent work at this level is elusive because teams are not static. Depending on the issue or problem to be addressed, team members may find themselves revisiting the storming and norming stages. There are two major reasons why high functioning teams revert to earlier stages of team building. New circumstances often provoke reconsideration of an issue previously resolved. In addition, certain dimensions or aspects of a problem may reveal strong philosophical differences among team members. Because teaching teams usually work in more than one stage of team building, Matusak's categorical approach to comparing teams is not practical for research on the effects of teaching teams on student performance.

Lencioni and Corporate Management Teams

Like Matusak, Lencioni recognizes that only a few teams perform at the highest level. Although he does not credit Matusak's work, his observations also result in a hierarchical view of team function. In *The Five Dysfunctions of a Team,* Lencioni (2002) describes five functions essential to effective teams. His pyramid model of the five functions (Appendix A), with one dependent on the other, parallels Matusak's four stages of team building. Lencioni would certainly support Matusak's admonition, "Only when each member (of the team) accepts credit for successes and equal responsibility for failures will the team be creative and dynamic" (Matusak, 1997, p. 73). The top tiers of Lencioni's pyramid are accountability and results. Taken together these correspond to Matusak's performing stage of teamwork.

Lencioni also sees a storming stage as necessary for any team to solve a difficult problem. He believes team members must express their views candidly and embrace conflict in order to arrive at the best solution to any problem. In order to disagree openly, team members must trust each other. The issue of trust is the first dysfunction to address when building an effective team following Lencioni's model. According to Lencioni (2002) the five dysfunctions of a team are:

1. Absence of trust. The first and most critical dysfunction of a team is a lack of trust among its members.
2. Fear of conflict. Team members must express opinions honestly, openly and without reservation. The conflict between team members caused by this candor

should be embraced and welcomed because only if all members air their views, can the team make the collective best decision.

3. Lack of commitment to the team decisions. All members can fully commit to the team decision if their points of view have been heard in the course of passionate and open debate.
4. Avoidance of accountability. Without real commitment, members develop an avoidance of accountability. Without committing to a clear plan, members will hesitate to call their peers on counterproductive actions or behaviors.
5. Inattention to results. Failure to hold team members accountable leads to inattention to results. This happens when team members hold their individual needs (ego, career development, or recognition) or their needs for their work group (students or employees) above those of the team.

More simply stated in the positive, effective teams:

1. Trust one another.
2. Engage in unfiltered conflict around ideas.
3. Commit to the team's decisions and plan of action.
4. Hold one another accountable for delivering against those plans.
5. Focus on the achievement of collective results (Lencioni, 2002, p. 189-90).

Lencioni illustrates these five functions in the form of a pyramid with *trust* at the base being the most important. While Matusak views a team progressing along a continuum of four stages of development, Lencioni emphasizes the inter-connectedness of the five functions of a team—trust, conflict, commitment, accountability, and results.

All five elements are essential and dependent on the others' presence for a team to function effectively.

Lencioni provides a short self-assessment survey that teams may use to determine their level of team functioning vis-à-vis his pyramid model (Appendix A). Using this survey indicates which dysfunctions are affecting the team and need corrective action.

Using Lencioni's model to compare teaching teams has two weaknesses. The first is that Lencioni does not cite any studies or research to support his conclusions. His work is based on the pragmatic results from years of consulting in the corporate world. The second area of concern arises when Lencioni's model is applied to teaching teams in particular. A significant difference between the teams in schools compared to those in the corporate environment is the absence of a clear indicator of team success such as profit or the bottom line. Without a clear indicator of team success the teachers have more difficulty avoiding the temptation of independent initiative and restraining their pedagogic egos in order to achieve greater long-term results as a team. Teaching is essentially a professional service, provided on the basis of a personal relationship between a teacher and student compounded by the simultaneous presence of twenty to thirty other relationships in the class.

Applying Lencioni's call for accountability using a bottom line to leverage improved student performance does not adequately take into account the complex network of relationships in the classroom. Alfie Kohn's work questions the premise that the bottom line can be motivational for adolescents either as individuals or as a group (Kohn, 1999). Kohn believes that extrinsic rewards for achievement are counter-productive when given to children and adolescents. He points to negative effects on the

individual student as well as the recipient's peer group. Standing among one's peers is paramount for adolescents. An adolescent's social status is not based on achieving goals sought by the adult community. Kohn suggests that students not receiving rewards are not motivated to improve. Rather, they ridicule such achievement and seek negative alternatives to establish their identities and place in school. Kohn finds that intrinsic rewards, not extrinsic ones, are more effective in reaching any student or school-wide goals.

How Kohn's theory of intrinsic and extrinsic rewards fits with Lencioni's team theory remains unclear. Kohn and Lencioni both see a critical role for individual and collective accountability. Kohn might also support Lencioni's claim that "By shifting rewards away form individual performance to team achievement, the team can create a culture of accountability" (Lencioni, 2002, p. 215).

A single-minded focus on the students' test results could become a school's bottom line if the federal law No Child Left Behind results in a teach-to-the-test mentality. With this paradigm shift, individual members of a teaching team could be expected to succeed by following Lencioni's model. But the answer to a teaching team's question, What is the heart of our work? is not simply good test scores. The heart of a teaching team's work is often elusive or at best so multifaceted that pulling together as a team is frustrating for even the most dedicated teachers. Lencioni's model applies best to teams teaching specific skills with measurable short-term goals for student performance that provide a clear bottom line.

Rottier (2001) takes a parallel approach to Lencioni's in his advice for improving team function. His work with teaching teams in middle schools found that the symptoms

of dysfunctional teams fall into four areas; team focus, leadership, communication, and ground rules. Rottier's team focus is reminiscent of Lencioni's team commitment, accountability, and results. His leadership and communication dysfunctions relate to Lencioni's absence of trust and fear of conflict. Rottier's analysis is noteworthy because he focused specifically on the teaching teams in middle schools, however he provides no instrument for measuring team function.

In his companion volume, *Death by Meeting*, Lencioni (2004) points to a characteristic of effective teams that is unrelated to dysfunctions or stages of development. Highly effective teams have meetings of different lengths for different purposes. This book provides a remedy for a common frustration experienced by many professionals in the private and public sectors. Most believe they attend far too many meetings that accomplish far too little for the time and energy they require. Lencioni does not advocate fewer meetings. He claims that most management teams need more meetings not fewer, but a single meeting format cannot effectively meet all the responsibilities of a management team. Lencioni gives direction for improving the structure and context of team meetings. To adequately address the broad range of issues faced by management, Lencioni advocates four distinct types of meetings (Table 3).

Just as teachers differentiate their instruction to meet individual student's needs, an effective teaching team would likely differentiate the purpose and format of its team meetings. Looking for evidence of different uses of team planning time may be another indicator of the degree of function of a teaching team.

Table 3. Lencioni's Four Types of Meetings

Meeting Type	Time Required	Purpose and Format
Daily Check-in	5 minutes	Share daily schedules and activities
Weekly Tactical	45-90 minutes	Review weekly activities and metrics, and resolve tactical obstacles and issues.
Monthly Strategic (or Ad Hoc Strategic)	2-4 hours	Discuss, analyze, brainstorm, and decide upon critical issues affecting long-term success.
Quarterly Off-site Review	1-2 days	Review strategy, industry trends, competitive landscape, key personnel, team development.

Note. From *Death by Meeting,* by P. Lencioni, 2004, San Francisco, CA: Jossey-Bass.

Bales and Walton Examine Characteristics Relevant to Teaching Teams

Working independently, Bales and Walton found that the attitudes and behaviors of team members are equally important to a team's success. Their conclusions compliment and support the team concepts described by Matusak, Lencioni and Rottier.

Robert Freed Bales (1970) studied the roles of individuals and their interaction as members of a group. Bales found that each team member's feelings of inclusion or exclusion are constantly in play. To what extent is the team inclusive of all members? Do some members of the team feel excluded from the decision-making process? A sense of inclusion shared equally by all members is critical to the effective function and success of teaching teams.

Bales found that another factor critical to a team's success at solving problems is how individuals deal with conflict. He studied the degree to which groups suppress

internal conflict or integrate it constructively to resolve differences and make decisions. Bales' work lays the foundation for the conclusions of Matusak and Lencioni that conflict is essential to an effective decision-making process. A team's solution for solving any problem must respect and carefully consider the various points of view of all its members. Suppressed internal conflict undermines the commitment of all the individuals necessary to successfully implement any team decision.

The energy level of the group is a third way of looking at a group's behavior. Richard Walton (1987) studied mediation and the role of a third party in settling disputes. He found that mediators who were adept at regulating the stress level of the sessions were most likely to reach successful resolutions. According to Walton (1987), "the individual's maximum ability to integrate and to utilize information occurs at some *moderate stress level*" (p. 97). If the threat of interpersonal conflict is low, there is no sense of urgency and no reason to look for alternatives. At a very high level of threat, a person's ability to process information and perceive alternatives decreases. An appropriate balance between stress level extremes supports an effective decision-making process.

Eiseman on Ensuring that Leadership Functions on Teams are Fulfilled

Building on the work of Bales, Walton, and Lencioni, Jeffrey Eiseman describes leadership functions essential to effective teams. According to Eiseman, "The major difference between groups that receive high versus average performance ratings in complex tasks is that the latter more frequently and thoroughly perform leadership functions" (Eiseman, personal conversations, 2005). Eiseman describes a number of

leadership functions as tasks focusing on the productivity and quality of the team's work. For example, assessing the team's understanding of the job to be done and the criteria for evaluating their performance is essential. Equally important leadership tasks are: attending to the group's problem solving process, identifying what resources the group will need and how to obtain them, dividing up the work among members efficiently so timelines are met, and holding each other accountable for following through on assignments. In addition, someone has to call the group's attention to results, i.e., the product quality of the team.

Expanding on Walton's concept of the energy level of a team, Eiseman adds another task as a leadership function—"monitoring and adjusting the level of energy and tension". If these levels are too low, members are complacent, but if they are too high, "members become irritable, closed-minded and defensive" (Eiseman, personal conversations, 2005). In order to maximize its effectiveness, a team needs to maintain a middle level of energy.

Eiseman's leadership functions are more complex than the differentiated roles commonly assigned among members of a team. Typically members organize their contribution to the team by taking on the role of facilitator, recorder, provocateur, or consensus builder. On teaching teams, a fifth role may be necessary when they struggle with issues of instructional equity and accommodation that require a collective conscience. A teacher may need to serve as the team's philosopher or ethicist to remind colleagues of their legal and moral responsibilities as educators. These five roles are related to the task subset of Eiseman's leadership functions. For example, the philosopher/ethicist would attend to the team's product quality.

Beyond these tasks and roles, two other subsets of Eiseman's leadership functions focus on the behaviors and attitudes of team members. He describes five behaviors that support the leadership function of modeling judicious risk-taking and openness. These behaviors include admitting weaknesses and mistakes, offering assistance and feedback, offering and accepting apologies, suspending initial negative judgments, and accepting questions or criticisms.

Eiseman describes a leadership function that attends to the attitudes and feelings of team members as establishing and maintaining psychological safety for the group. To be optimally effective, individuals in the group must feel accepted, heard and influential. They also need to feel safe enough to challenge an apparent consensus or bring disagreements into the open. Another leadership function ensures equity among team members. Each member must contribute a fair share to accomplishing the team's work and feel accountable to colleagues for achieving results.

Assessing Teaching Team Practice

The work of Matusak, Lencioni, Rottier and Eiseman provides conceptual lenses for comparing the instruments designed by others to evaluate teaching teams. Five professional associations recognize middle school teaching teams for their excellence—the National Middle School Association (NMSA), the New England League of Middle Schools (NELMS), the Connecticut Association of Schools (CAS), the Commonwealth of Massachusetts for Middle Level Education (COMMLE), and the Vermont Association for Middle Level Education (VAMLE). The recognition programs of these organizations use a variety of methods to compare teams including self-assessment surveys and

verification by outside observers. Teaching teams are compared against a set of exemplary practices and characteristics based on the principles of *This We Believe* and *Turning Points* as previously described in this paper.

Having been derived from the same sources, it is not surprising that these five recognition programs consider many similar characteristics of excellence. A synthesis of the elements common to these assessment programs follows in four categories.

1. Team demographics are the statistical facts describing a teaching team. Together these characteristics describe the physical presence or face of the team. They answer the question, Who are we, as a team? Team demographics can be divided into two subcategories; one pertaining to teachers and another pertaining to students.

Characteristics pertaining to students are:

Number of students on the team,

Gender balance of students on the team and in instructional groups,

Grade levels are grouped homogeneously, multi-grade and/or looped,

Students are grouped homogeneously/heterogeneously based on past performance,

Students have advisory groups.

Characteristics pertaining to teachers are:

Team size,

Number of Teachers

Number of non-core teacher member included

Gender balance - all female, all male, or heterogeneous,

Licensure – elementary, secondary or middle grades endorsement,

Years of teaching experience (middle level vs. grade levels),

Team meeting time – frequency and duration,

A written team plan is in effect.

In addition to these demographic variables, a significant contextual variable is the presence and extent of administrative support for teaching teams.

2. Teacher tasks reveal how the team operates. These answer the question, What do the team members do and how do they work together to reach common goals? Teams:

Structure meetings for different purposes,

Take on differentiated roles and assign tasks equitably,

Integrate curriculum,

Plan and coordinate team activities,

Promote parent involvement in team activities,

Coordinate student assignments and assessments,

Differentiate instruction,

Work together on student discipline,

Provide each student with an adult advocate,

Conference with parents and students,

Support and promote students self-governance.

As part of the Middle Start Initiative, researchers at the Center for Prevention and Research Development (CPRD) studied teaching teams extensively. To date, the Middle Start Initiative, which studied middle schools in Michigan, Mississippi, Alabama and Arkansas, is the most extensive and complete long-term study of teaching teams available. The CPRD developed extensive self-study surveys for all the stakeholders in a

school including students, staff, parents and administration. These self-study results are augmented by interviews and on site visits conducted by the research team.

The Middle Start self-assessment survey for core teachers in mathematics, English, social studies and science results in twenty-four rating scales. Of these, three scales are specifically relevant to the tasks of teaching teams—planning and coordination of team activities, curriculum integration practices, and coordination of student assignments and assessments. In addition, under the survey's category of "Classroom Instructional Practices," the scale integration and interdisciplinary practices is germane to teaching team function. The CPRD has tested all twenty-four rating scales for reliability. With permission from the CPRD, these four scales could be included as elements in an instrument to measure the functioning level of teaching teams.

3. Teacher behaviors describe the team's personality. These answer the question, How are the leadership functions of the group performed? Teams:

Establish mutual trust and respect,

Make decisions inclusively,

Have a feeling of togetherness rather than factions,

Deal with conflict effectively,

Regulate their energy level, neither too hyperactive nor complacent,

Hold colleagues accountable for results.

4. Student attitudes reveal the team's collective identity and spirit. These characteristics answer the question—How do the teacher and student members of the team relate to each other? Team members have:

A sense of belonging and identification with the team,

Team traditions e.g., song, logo, identity,

High morale,

A team vision shared by students and teachers,

Team spirit.

Bishop and Boyer (2004) described and analyzed young adolescents' perceptions of effective teaching teams. Qualitative methods were used to interpret the perceptions of 77 students from three middle schools. These included participant observation, document review, journal writing, focus groups, and photo-elicitation interviews. The data indicated, "When students are invited to collaborate in team governance and learning, many students report positive personal growth" (p. 16). Team meetings were led by students at the beginning and end of each day providing an opportunity for students to voice their opinions. "Students and teachers together shared the responsibility for creating a safe and comfortable learning environment" (p. 10). Students in this study expressed a sense of belonging and a sense of community.

Next Steps to Conceptualize an Approach to Assessing Teaching Teams

Any instrument designed to compare teaching teams' functioning levels should be broadly based and measure characteristics from all four categories—team demographics, teacher tasks, teacher behaviors and student attitudes. A comparative study should consider the thirty-three characteristics identified in these four categories. Of these the characteristics, team demographics, should be considered contextually before comparing teams because they are not indicative of a teaching team's practice.

Teacher tasks, teacher behaviors and student attitudes provide the most promising variables to assess a teaching team's degree of function. Eight of the teacher tasks can be easily measured as either evident or absent—meetings structured for different purposes, differentiated roles and jobs, team activities that promote parent involvement, differentiated instruction, a collaborative approach to student discipline, an adult advocate for every student, team conferences with parents and students, and support for students' self-governance.

The four scalar measures developed by the CPRD assessed a teams' planning and coordination of team activities, coordination of student assignments and assessments, integration of curricula, as well as integration and interdisciplinary practices in the classroom. Combining these scores would provide a scalar measure comprehensively assessing teacher tasks on the team.

Assessing teacher behaviors as they relate to team leadership functions would require a survey of members' perceptions regarding the internal dynamics of the team. This survey should focus on all six teacher behaviors as outcome variables—mutual trust and respect, inclusive decision making, effective means for resolving conflict, a sense of togetherness, maintaining an productive energy level, and holding colleagues accountable for results. Except for energy level, these teacher behaviors parallel Lencioni's five dysfunctions of teams. His questionnaire (Appendix A) could be used to measure five of the six teacher behaviors, but additional survey questions would need to be developed to determine if the team regulates its energy level.

Student attitude is one of the most important indicators of an instructional team's effectiveness because a positive attitude can improve student performance.

A confidential student self-assessment survey could be designed to address the five characteristics of teaching teams in this category. Three of these—student morale, sense of belonging, and team spirit—may also be gauged by asking the teachers on the team.

Following this conceptual framework, a comprehensive instrument will be constructed to measure and compare the level of functioning of teaching teams. The first part of this instrument would establish the team's demographic characteristics. A second section would focus on teacher tasks and behaviors by adapting measures and rating scales developed by Lencioni, the CPRD and the CAS.

The purpose of developing such an instrument is to find which aspects of team function are related to which student outcomes, if any. As conceptualized, making this instrument reliable and practical for use in further research on teaching teams will require additional resources of time, insight and expertise. The potential for future research and its impact on teaching and learning in middle schools make the development of this instrument well worth the effort.

Summary of Extant Literature

This chapter provided a historical perspective on the evolution of the contemporary middle school from initial efforts to reform the classic high school in the mid 20th century. The survey of the extant literature pertaining to teaching teams and their affects on student outcomes was reviewed in three categories: Normative models from *The Modern Junior High School*, *Turning Points*, and *This We Believe*; Empirical studies comparing junior high and middle school model, characteristics of middle schools that affect student outcomes, and conceptual theory; Comparing teaching teams and

Assessing exemplary team practices. These three sources of perspective and insight—normative models, empirical studies, and conceptual theories—provide the foundation for a conceptual framework necessary to support this study (Figure 1).

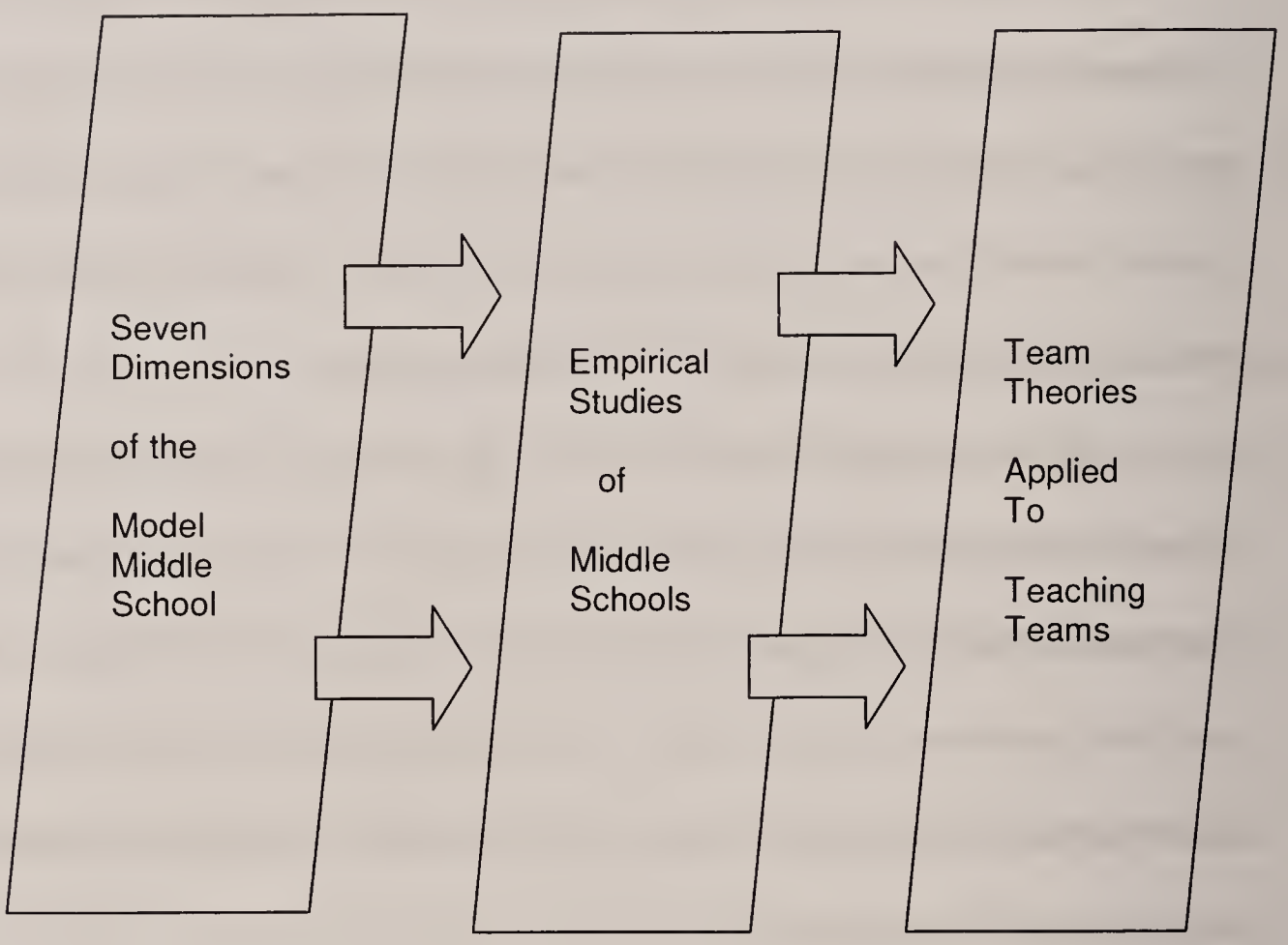


Figure 1. Conceptual framework based on normative models, empirical studies and team theory.

In light of the previous literature and research, the question for middle school practitioners remains—what are the specific elements and characteristics of teaching teams that significantly affect student performance in middle schools? Given the prevailing political environment of high stakes testing for insuring school accountability, finding the answers to this question is imperative.

The next chapter will describe the instruments and study design developed to investigate this question. Subsequently, Chapter 5 will refer to the normative models,

empirical studies and conceptual theories described in this chapter to construct the conceptual framework for interpreting and discussing the results of this study reviewed in Chapter 4.

CHAPTER 3

RESEARCH METHODS

Introduction and Overview of Quantitative Research Design

This research study tested the hypothesis that eighth grade student performance in mathematics and language arts is influenced by teaching team characteristics and practices. A quantitative research design was determined to be the most effective way both conceptually and politically to address the questions raised by this hypothesis. A number of researchers have employed qualitative and quantitative methods to investigate the effectiveness of teaching teams. In the 1990s many educators asserted that interdisciplinary teams of teachers working with students in middle grades 5–8 were more effective than traditional instruction in isolated disciplines. Research reported elements of team teaching positively affect student learning, behavior, and achievement (Arhar, 1990, 1994; Arhar & Irvin, 1995; Dickinson & Erb, 1997; Flowers et al., 1999; Mertens et al., 1999). While qualitative studies may prove informative for practitioners in the field, they have little or no credibility and influence on the state's political leaders, school boards and legislature.

Quantitative studies enjoy much greater public confidence and directly influence those responsible for establishing public policy and law. To date the most complete quantitative study of the middle level educational practices was conducted by the Center for Prevention and Research Development (CPRD) in Michigan and Arkansas (Mertens et al., 1999). The CPRD research funded by the Carnegie Middle Level Initiative preceded the state testing mandated by NCLB. The research design of the present study is more narrowly focused on the elements and characteristics of teaching teams that

correlate with student performance on the new standards based tests required by NCLB. It is the first quantitative study of teaching teams and student performance in Vermont. The use of quantitative methods for this research permits any conclusions to be more influential with policy makers at the local, state and national levels.

Before proceeding further with the details of the quantitative design, a clear definition of teaching teams is required. This study defines teaching teams as two or more teachers representing various curricular disciplines, but each team must include both mathematics and language arts. Data collected for each teaching team enabled the analysis of various factors relating to the successful practices of middle school teams cited in the previous chapter. For example, teacher experience and length of time working as a team, both positively impact the effectiveness of teaching teams (Erb & Stevenson, 1999). In addition, more teachers on a team, i.e., larger teaching teams, correlate negatively with effective teaming. (Bishop & Stevenson, 2000, Alexander, 1995).

This design employs a mix of scalar and nominal quantitative measures. Whenever possible, independent and dependent variables are scalar, but a number of characteristics of teaching teams and schools are simply present or not present. These are reduced to a nominal yes/no indicator. See Appendix B for a complete list of the variables examined in this study.

Among the nominal measures, the most important is the summative indicator of a school's adequate yearly progress (AYP) as required by NCLB. Although scalar measures are preferred for quantitative analysis, including AYP data in this research design improved the public's confidence in the findings of this study. Given the legal

requirement that a school's AYP be reported publicly, AYP is the most politically influential indicator of school quality.

The quantitative methodology of this study required participating teaching teams to complete survey items using a five point or yes/no scale. This design reduced the descriptors and attributes of widely variable teaching practices to numerical indicators. The resultant data are not intended to reveal the nuances of what practitioners may consider the art of teaching. Some teachers may consider this as an inherent weakness in the research design and to some degree all quantitative research is susceptible to this criticism. A limitation of this research design is that the study's findings may be viewed skeptically as too reductive and narrowly objective.

Instrumentation Development

To test the hypothesis of this study, student performance was compared across teaching teams of differing characteristics and using a variety practices. Two self-assessment surveys measured the degree to which teachers use exemplary teaming practices. One examined the group dynamics of the teaching team. The second focused on fifty-two observable characteristics and practices of teaching teams. The principal of each school completed a third survey to corroborate some responses obtained from the teaching team surveys and to provide additional demographic information describing each team.

The response data from the two surveys completed by teachers established a database to compare teaching teams that included both nominal dichotomous and continuous scalar measurements. This mix of nominal and scalar data reported teaching team characteristics and practices. The test scores of eighth grade students on the 2005

New England Comprehensive Assessment Program (NECAP) in mathematics, reading and writing provided three continuous scalar measures of the student performance.

Gauging Teaching Team Practice

The primary technical challenge of this study concerned developing instruments to measure teaching team practices that would make sense to educators. Three different surveys were developed specifically for this study to gauge teaching team practices. Each of the three surveys was designed to focus on the elements of teaching teams from three points of view—the individual teacher, the teaching team, or the school principal. All three self-administered surveys used a four-point scale for most items. The definition of the scale at the numerical limits of 1 and 4 vary according to each survey or subgroup of survey items. Instead of a five-point scale, a four-point scale forced those surveyed from taking the least offensive and problematic middle ground. On a five-point scale this middle ground would be "3." A more indicative choice towards one extreme or the other was obliged by the four-point design. The degree to which teachers use exemplary team teaching practices was primarily measured by two self-administered surveys, a group dynamics survey, and a teaching team survey. Each team member independently completed the group dynamics survey, *How We Function as a Team* (Appendix C). Teachers then met as a group to complete the teaching team survey with a single team response to each survey item in the *Teaching Team Survey* (Appendix D).

How We Function as a Team, the Group Dynamics Survey

The individual teacher self-administered survey, *How We Function as a Team,* focused on the internal group dynamics of each teaching team. This survey assessed the degree to which the teaching team functioned with respect to various aspects of small group dynamics. The twenty-four items in the *How We Function as a Team* survey were based on the work of Patrick Lencioni (2002) and Jeff Eiseman (personal conversations, 2005). In *The Five Dysfunctions of a Team,* Lencioni provided a self-study instrument for use by corporate leaders and their management teams to improve their effectiveness as a team (Lencioni, 2002). Eiseman revised the items in Lencioni's survey to make them more interpretable and more relevant to educators. These changes made the items less ambiguous and less open to variances in interpretation.

To field test the survey, teachers not participating in the study, reviewed the content and format. A draft version of the *How We Function as a Team* survey was critiqued and edited by a panel of middle school teachers from a variety of disciplines, including science, English and mathematics. Their feedback informed the final revisions of the *How We Function as a Team* survey.

Items on the survey were designed to address specific attributes or characteristics of the teaching team, for example, "We point out one another's problematic or unproductive behaviors." Another example is "We hold each other accountable for contributing equitably." Directions for this survey follow. "Before meeting as a team to complete the *Teaching Team Survey*, please complete this survey individually. Using the scale below, evaluate the statements honestly and without over-thinking your answers." Teachers responded to each item on a scale from 1 (rarely) to 4 (routinely).

Teaching Team Survey, a Collaborative Team Assessment

This instrument was developed to assess observable characteristics and practices of the teaching team as a whole. The *Teaching Team Survey* is based on a survey developed by the Connecticut Association of Schools (CAS), the *Middle Level Schools Effective Teaching Team Practices, Team Self-Assessment Scoring Instrument* available on line at www.casciac.org (CAS, 2003). Items from the CAS survey (Appendix E) were revised and augmented to include fifty-two items addressing thirty-three elements common to most teaching teams (see Chapter 2). The resulting items can be grouped into the three conceptual clusters mentioned in the previous chapter—team demographics, teacher tasks and teacher behaviors. Team demographics are the statistical facts describing a teaching team and answer the question, Who are we, as a team? Teacher tasks reveal how the team operates and answer the question, What do the team members do and how do they work together to reach common goals? Teacher behaviors describe the team's personality and answer the question, How are the leadership functions of the group performed?

Although the team self-study instrument is unavoidably subjective, the items included have been developed by educational associations to elicit valid responses from practitioners in the field. With permission from CAS, many items came directly from the *Middle Level Schools Effective Teaching Team Practices, Team Self-Assessment Scoring Instrument*. This self- administered teaching team survey continues to provide the basis for CAS certification and recognition of exemplary teacher teams in Connecticut middle schools. This annual recognition program has a reputation for integrity and high standards, and enjoys high credibility with teachers, parents and students. Other New

England states' associations of middle level educators have adopted similar criteria for evaluating teaching teams. Most notably for this study, the Vermont Association for Middle Level Education's (VAMLE) Spotlight Award parallels this model for evaluating teaching teams in Vermont's middle schools.

Considering its use by the profession, items from the *CAS Team Self-Assessment Scoring Instrument* have face and content validity. No information exists regarding the CAS survey's reliability, concurrent validity, predictive validity, or construct validity.

Examples of survey items considered as team demographics include; years of experience on the team for each member, percentage of female students on the team, and percentage of special education students on the team. Teacher task items asked about the ways the team plans for instruction, assesses student progress, and communicates with parents. The teacher behaviors cluster included items such as "Does the team share ideas, practices or decisions with non-team staff?" and "Does the team handle discipline problems together?"

Teaching teams collectively reflected on their work and collaborated to complete the *Teaching Team Survey* (Appendix D). For most items the team responded on a four-point scale from 1 (rarely) to 4 (routinely). Other items required a four-point scale with different indicators—1 (never/rarely), 2 (monthly), 3 (weekly) or 4 (more often than weekly).

The *Teaching Team Survey* also included two open-ended questions that parallel two similar questions that conclude the principals' *School Demographic Survey*. These open response questions ask the team to "Name 2 or 3 things about your team or about

the way that you work together that make you proud," and "Name 2 or 3 things about your team or about the way that you work together that you would like to improve."

School Demographic Survey Completed by the Principal

For the third survey the principal of each of the thirty-one participating schools completed a *School Demographic Survey* (Appendix F). This survey provided demographic information about each team and revealed the factors considered by the principal when assigning teachers and students to the school's teaching teams. For example, "To what extent did the following factors affect assignments of TEACHERS to teams?" Principals responded on a four-point scale from 1 (little or none) to 4 (a great deal).

The *School Demographic Survey* also included two open-ended questions that parallel the two that conclude the *Teaching Team Survey*. These open response questions ask respondents to name two or three characteristic strengths of the teaching team as well as "two or three things about this team or about the way its members work together that you would like to see improved."

Measuring Student Performance, the New England Comprehensive Assessment Program

This study measured student performance for each teaching team on the tests required by the New England Comprehensive Assessment Program (NECAP). These tests were developed on contract with Measured Progress, Inc. to assess student performance on state standards held in common among Rhode Island, New Hampshire and Vermont. The contents are copyright protected, but a number of items for each exam

are available annually. More details are available at http://www.measuredprogress.org/ or http://education.vermont.gov/index.htm.

In response to political demands for public school accountability, Vermont began piloting new state tests in January 2005. Beginning October 2005, the New England Comprehensive Assessment Program (NECAP) was used to determine student performance. All 8th grade students in Vermont, New Hampshire and Rhode Island took the NECAP tests in reading, writing, and mathematics. The results were the primary factor in determining if a school met the state's goals for improving student performance commonly referred to as the school's AYP as defined and required by NCLB. The tests results from October 2005 were released to the public in March 2006. The summary NECAP test data for each teaching team's student performances in reading, writing, and mathematics were used as the dependent variables for this study.

The Vermont State Department of Education reports student performance data by two summary methods, either by teaching group or testing group. This study used test data reported by teaching group to connect the 8th grade students' scores in October 2005 with their 7th grade teaching teams for the previous school year, 2004–2005. These data are available to the principals who in the case of schools with multiple teaching teams provided raw student scores that were disaggregated and summarized by teaching teams. Examining the NECAP test results as reported by teaching group avoided any corruption of the data by eliminating the test scores of students who transferred into the school in the fall of 2005, but were not members of the 7th grade teaching cohort group.

Data Collection

Participants Sample

This research focused on eighth grade students and the teaching teams responsible for their instruction in the 7th grade during the previous year. This target population included all public schools in Vermont. All Vermont schools having grades 7 and 8 received letters of invitation to participate in this study. See Table 4.

Table 4. Configuration and Number of Vermont Public Schools with Grades 7 and 8

Grade Level Configuration	Vermont Schools	Participant Schools
Pre K - 12	3	1
K -12	7	2
6 - 12	4	1
7 - 12	19	9
Pre K - 8	11	2
K - 8	43	8
4 – 8	1	1
5 – 8	2	0
6 – 8	13	3
7 - 8	9	4
Totals	112	31

Note. Data compiled from VT DOE and Vermont Association for Middle Level Education, 2006.

Access to the Field Sample and Data

At their annual retreat on July 26, 2005, the Vermont Association for Middle Level Education (VAMLE) Board endorsed the proposal for this research. VAMLE represents all educators concerned with Vermont's students in grades 5–8. VAMLE is affiliated with the New England League of Middle Schools (NELMS) and the National Middle School Association (NMSA). VAMLE's endorsement of this research facilitated access to the wide variety of public schools teaching Vermont's 7th and 8th grade students.

Ray Pelligrini, the Executive Director of the Vermont Principals' Association, used his statewide list serve to post a friendly email reminder and thank you to all middle school principals for participating in this study. Principals who agreed to participate received personal letters of appreciation to reinforce the importance of this study.

The summary data of Vermont schools' student performance on the NECAP tests administered in October 2005 was released in March 2006. Summary school data are annually posted by the Vermont Department of Education at www.state.vt.us/educ/new/html/pgm_assessment/data.html.

The research sample included thirty-one public schools that agreed to participate. The 31 principals, 178 teachers and 44 teams teaching 7th graders in the participating schools completed the study's three survey instruments. Schools in the sample represented a broad range of demographic attributes including geographic location, student enrollment, student expenditures and other economic indicators. The sample group included at least one school from every region of the state representing 9 of Vermont's 12 counties. The largest and smallest of Vermont's schools were also included in the sample with grade 7 enrollments ranging from 8 to 187. Eight schools

have multiple grade 7 teaching teams—4 have two teams, 3 have three teams and 1has four teams. Twenty-four schools have only one team teaching 7th grade students. From the perspective of the independent variables defined by this study, the sample group is a representative cross-section of all public middle schools in Vermont.

A timeline briefly summarizing the data collection procedures of this study appears in Table 5.

All 112 public schools in Vermont teaching both grades 7 and 8 were invited to participate in this study. Each principal received a mailing that included a letter of introduction, an informed consent document, an abstract of the study, and the author's biography. See Appendix G for a copy of this initial mailing. Thirty-one public schools fully participated in this research.

After obtaining consent to participate in this study from the school's principal, 7th grade teaching team members independently completed a group dynamics survey, *How We Function as a Team.* Individual responses were collected from 178 teachers representing 44 teaching teams. Team members completed this group dynamics survey anonymously and to insure confidentiality, returned their responses individually via the postage paid return envelopes provided. As indicated in the letter of consent, to maintain absolute confidentiality, all survey materials were kept in a locked file available only to the author of this study.

Table 5. Summary of Data Collection Procedures Including Dates of Completion

Action	Involves	Date
Locate sample schools and grade 8 enrollments and grade 7 teaching teams from Vermont D.O.E. database.	129 VT schools with grades 7 & 8	August–September 2005
Send letters of introduction including principal's survey and obtain consent.	Principals/ Superintendents	October 31, 2005
Follow-up phone calls or email.	Principals/ Superintendents	November 2005– March 2006
Mail survey materials to participating schools	Principals	November 2005– March 2006
Mail reminder letters.	Principals	November 2005, February 2006
Collect and enter survey responses in SPSS database: *School Demographic Survey* —principals *How We Function as a Team* —individual 7th gr. teachers *Teaching Team Survey* —7th grade teaching teams	Principals and 7th grade teams for 2004 - 2005	November 2005– March 2006
Mail thank you notes to participating schools	Principals	November 2005– March 2006
Collect NECAP test results for 8th grade students by cohort teaching group..	Vermont D.O.E.	March 2006
Closed sample group and completed entry from surveys	Steven John	May 2006
Collect demographic data for participating schools	Stephen Magill, Vermont D.O.E.	Spring–Summer 2006
In multi-team schools, obtain student performance data disaggregated by grade 7 teaching team	Principals/ Superintendents	April 2006– September 2006
Collect financial data for participating schools and their districts.	Stephen Magill, Vermont D.O.E.	September– October 2006
Database completed	Steven John	November 2006

Subsequently, the 44 teaching teams completed the *Teaching Team Survey*. This survey required collective responses from each of the teaching team who taught 7th grade students for the 2004–2005 school year. The response data obtained from both surveys was identified by school and team names only. No personal identifiable information was recorded from either survey. In this way individual teacher confidentiality was preserved

while insuring the response data from all three surveys were linked by teaching team. Each of the 44 teaching teams was considered as a separate case in the database.

Additional information about the teaching teams and their respective schools was helpful in isolating demographic characteristics that might affect the dependent variable student performance. A teaching team's student gender ratio, percentage of special education students, and factors influencing teacher and student assignment to the team were provided by each school's principal in the *School Demographics Survey* (Appendix F).

In addition to teaching team practices, the *Teaching Team Survey* also obtained demographic information about the team. The survey asked for the number of years teachers have been together on the team, the number of teachers on the team, the number of teachers having a middle level teaching license, and the years of teaching experience for each member. "Is the team multi-age or homogeneous by grade level?" "Are the students on the team heterogeneously grouped for classes?" "Do teachers and students work together for more than one year?" Responses to these items provided a more complete description of the teaching teams and enabled analysis to determine how these variables may relate to student performance.

More public information describing each school was collected directly from the Vermont Department of Education (VT DOE). The department's web site, www.state.vt.us/educ/ provided comparison data for the following attributes. These data were collected for the 2004–2005 school year unless otherwise noted:

1. School size by student enrollment on 11/1/04,
2. Grades taught in the school,
3. Adequate Yearly Progress (AYP) status based on the fall 2005 NECAP results,
4. Percentage of students receiving free or reduced lunch,
5. Median household income in the school district,
6. Percentage of district households with incomes less than $75,000 (2004 CY),
7. Allowable tuition,
8. Budget per equalized pupil,
9. Cost per pupil ranking by cohort group,
10. Expenditure per equalized pupil,
11. Cost effective ranking by cohort groups based on school size and grade level configuration,
12. Median household income for 2003 CY,
13. Student / teacher ratio,
14. Student / administrator ratio,
15. Teacher / administrator ratio, and
16. Student Performance.

On March 22, 2006, the summary results of the NECAP tests were released to the public for every school in Vermont with more than 15 students in each grade. These fall 2005 NECAP test results for reading, writing, and mathematics were collected as the primary measures of student performance. The student scores for 8th graders were reported by testing group (SY 05–06) as well as teaching group (SY 04–05). These teaching group reports linked the summaries 8th grade student performance to the 7th

grade teaching team responsible for their instruction in the 2004–2005 school year. For schools with more than one teaching team, the principal verified this linkage. In this way the aggregate school scores for student performance in each of the three subtests—reading, writing, and mathematics—were disaggregated according to the 7th grade teaching team responsible for their instruction.

Data Analyses

The data collected from all three survey instruments—the *How We Function as a Team* survey, the *Teaching Team Survey* and the *School Demographics Survey*—were coded to connect the responses to specific teaching teams and schools using numerical identification and pseudonyms to preserve anonymity.

The responses from the sample group's 178 teachers to the twenty-four items on the group dynamics survey, *How We Function as a Team,* were subjected to factor analysis. Factor analysis was also applied to the responses from the 44 teaching teams to the 52 items on the *Teaching Team Survey*. The purpose of these factor analyses was to reduce the number of variables and create a small set of internally consistent variables that may correlate with student performance. See Chapter 4 for the results of these factor analyses.

The *School Demographics Survey* and *Teaching Team Survey* provided demographic data on a number of contextual variables. A fourth source of data was demographic information obtained from the Vermont Department of Education's web site describing their student populations and school district.

The economic background of students is not directly relevant to the purpose of this study, but the effects of economic background on student performance were examined. A regression analysis was conducted using the household income information for all school districts and the NECAP performance data for all eight graders in Vermont. This regression analysis on the statewide data allowed the raw test scores of students on sample teaching teams to be compared to scores that could be expected according to the economic status of the team's school district (Appendix H). With the student performance outcomes controlled for the correlative affects of economic status, comparing teaching team characteristics and elements to student performance was more likely to provide answers to the study's question—What are the characteristics or elements of teaching teams that affect student performance?

The additional non-scalar academic outcome variable, a school's adequate yearly progress status (AYP), as required by the NCLB Act, was uncontrolled for the school's socio-economic conditions. By law the calculation of AYP status must ignore the economic background of the school district. In Vermont a school's AYP status is based on three factors, the primary one being student performance on the NECAP. In addition, the rate of student participation in the testing and the high school completion rate are considered (Appendix I: *How AYP Decisions Are Made*).

For this study student performance was assessed on the October 3–25, 2005 by the NECAP tests in mathematics, reading, and writing. A student's performance on these tests is indicated by level of achievement vis-à-vis Vermont's Grade Level Expectation for each subject. Student raw scores are reported to the public in summary form at four levels of performance. Level 1 indicates performance below the standard. A Level 2

indicates the student nearly met the standard. A student who met the standard earns a Level 3 score while Level 4 indicates the student exceeded the standard with honors. The percentage of students achieving levels 1, 2, 3 or 4 was calculated for each teaching team. The percentage of students meeting or exceeding the standard for each team was calculated by combining the percentages for level 3 and 4 students. This calculation determined the teams' high-cut scores for each NECAP test. Teams' low-cut scores were calculated by combining the percentages of students on the teaching team scoring at levels 2, 3 and 4 for each NECAP test.

With the exception of the school's AYP status, the outcome variables were measured using instruments resulting in continuous scalar data. Continuous scalar data comparing teaching teams' elements and characteristics came from the three survey instruments developed for this study. In the case of the *How We Function As a Team* survey, means of the responses of the team members to each survey item were used to compare teaching teams. This averaging of responses was not necessary for the *Teaching Team Survey*. The continuously scalar data supported comparison of student performance across teaching teams against each of the characteristics and elements of teaching teams identified by this study. Pearson correlations were computed between these pairs of variables and correlations corresponding to an alpha-level of .05 were noted.

A smaller group of variables in this study could only be measured using dichotomous scales. Whenever these dichotomous variables were compared, or compared with continuous variables, the data were subjected to Chi-square analysis. Due to the small number of cases available, the Chi-squares were calculated to include Yates'

correction for continuity. For each continuous variable a variety of cut-points were explored to convert the continuous scales to dichotomous values required for Chi-squares.

For example, this method applied to any continuous variable when compared with the school's AYP status. As a dichotomous variable AYP status can only be reported as 1 for yes or 2 for no. When making such comparisons, the scatter diagrams showed that when the amount of a possible explanatory variable exceeded or fell below a threshold level, the school was more likely to make AYP. Anything with a more complicated relationship to AYP would not be likely to lead to clear implications for policy-makers and educators. Accordingly a 2 x 2 table was created showing the number of schools scoring above and below the threshold that did and did not make AYP. Chi-squares including Yates' correction for continuity were computed for each 2 x 2 table.

The SPSS generated median or mean as well as cross tabulations and scatter plots suggested effective cut-points to test. The first cut-point used for any continuous variable was the sample's median. If the alpha-level was not met, additional cut-points were tested. These cut-points were established by observing the frequency tables or scatter plots generated by SPSS comparing the two variables. All Chi-square tests for this study had one degree of freedom. The resulting coefficients were compared with the standard Chi-square table for one degree of freedom and correlations corresponding to an alpha-level of .05 were noted.

Integrity of the Findings

All aspects of the study design meet accepted research standards for validity, reliability and objectivity. The teacher and ream surveys were beta tested with middle school teachers who did not participating in the study. Revisions of the survey items made them clearer and more focused on the variable being measured. Survey items requiring open-ended responses were repeated in the demographic and team surveys to check for reliability. The three survey instruments were based on assessment measures widely used and respected by state professional associations or corporate management. To check for reliability and determine confidence intervals for each survey, Cronbach's alpha was calculated using the responses for each instrument. Objectivity was insured by the design's protocols for the collecting, recording and analyzing the data. When available, data was obtained from the most objective source, the Vermont Department of Education. The department provided Excel spreadsheets containing the schools' demographic, AYP and student performance data used in this study. This electronic transfer of information insured the reliability of the statistics in the study's database. Statistical analyses were all conducted using SPSS software.

Electronic and hard copies of all data and analytic results were printed and retained securely for future reference and peer review.

Confidentiality and Ethical Considerations

The security of the data collected from participating schools and individuals was maintained at all times. During the course of data collection and analysis, strict confidentiality was preserved. Numerically coded identifiers were utilized for the

schools and all of the participants in the study. In addition, the completed surveys documents collected and identification key were kept in a securely locked file with access limited solely to the researcher. Finally, none of the information collected from any individual was replicated or shared in any way.

When available at a future date, a summary of the findings of this study will be shared with the principal of each participating school. No identifiable information will be included in this executive summary of the research and findings.

In order for the researcher to conduct the study, a formal application was made and approved by the Human Subjects Review Committee of the University of Massachusetts. Subsequently, a letter of consent to participate was signed by the principal of each school in the sample group and kept on file. See Appendix G for the study's consent forms and the university's Human Subjects Review Committee questionnaire.

Limitations of the Study

"Always be clear about your opinions before considering the facts." – Anonymous.

While the quantitative methodology of this study insures the integrity of its findings, the interpretation and implications of these findings depend on the perspective and experience of the researcher. As a teacher/administrator with more than twenty-five years of experience in middle schools, the author of this study is a strong advocate for developmentally appropriate education for adolescence. With this limitation in mind, the researcher took great pains to isolate and suspend his beliefs from the data collection and

analysis process. The quantitative methods of this research support the objective consideration of the data and integrity of its findings.

This study is limited by its research sample based entirely in Vermont. Vermont is a small rural state whose largest city has less than 35,000 residents. In comparison to national studies, this sample may be considered too narrow to apply to other states. Replicating this study in Rhode Island and New Hampshire, the two other states that use the New England Comprehensive Assessment Program (NECAP), could be a first step in checking its findings. Similarly designed studies in larger states with more ethnically diverse populations would be required before generalizing the conclusions of this study.

The findings based on the AYP status of the schools are suspect because as a measure of student progress AYP status is not directly linked to the work of any one teaching team. In Vermont a number of factors are included in determining a school's AYP status beyond student performance on the NECAP exams. Among these additional factors is the high school completion rate. This measure pertains only to schools with grades 7–12. Other factors include disaggregated NECAP scores for subgroups of students. These subgroups are defined by NCLB, e.g., students receiving free or reduced lunch, male or female students, ethnic minorities and students of English as a Second Language (ESL). As a result, any findings based on a school's AYP status warrant greater scrutiny and corroboration from more narrowly focused studies.

While the sample distribution of schools adequately represents a statewide cross-section of regional location, grade level configuration and school enrollment the sample size for each variable ranges from 31 to 44. The 31 schools participating in this study, represents 28 percent of the target population—Vermont's public schools with 7^{th} and 8^{th}

grade students. From a national perspective this small number of schools is a limitation, but this numerical small sample does represent middle level education in Vermont.

Two further limitation of this study are inherent to the research design. First, given the large number of variables measured by this study, the possibility of type one statistical errors should be considered. Type one errors are estimated to account for as many as 5% of the correlations found. Secondly, the sources for much of the data measuring the characteristics and elements of teaching teams are the self-reports of individual teachers and collaborating team members. While this study would not be possible without these sources, they are necessarily subjective.

CHAPTER 4

PRINCIPAL FINDINGS

This chapter first provides the background of technical and political considerations key to understanding the results of this study. The next section reviews the results of factor analyses applied to the survey response data obtained from individual teachers and the teaching teams. The main section of this chapter lists the correlations found by comparing variables. The chapter concludes with a brief summary of these results.

Background and Technical Considerations

Most findings of this study result from the analysis of scalar data based on continuous variables. These include all the indicators of internal team dynamics, most of the teaching team characteristics and practices, school demographic descriptors, as well as the outcome variables using the New England's Common Assessment Program (NECAP) to measure student performance.

To establish the reliability of the three surveys completed by the individual teachers, teaching team and principal respectively, Cronbach Alphas were calculated. Responses to the *How We Function As a Team* survey with 24 variables and 21 cases produced an alpha of .9657. The *Teaching Team Survey* with 49 variables and 38 cases produced an alpha of .9013. Surveys completed by the principals included eight variables and with 44 cases produced an alpha of .7530. These Cronbach Alphas indicate that the three survey instruments met the criteria for acceptable reliability.

The NECAP scores in reading, mathematics, and writing are considered independently as indicators of student performance. Variables describing the socio-economic status of students had the strongest correlations with NECAP performance scores. To control for the effect of students' economic status on the performance outcomes, NECAP scores were adjusted by formula to calculate *expected scores* for each school. This formula was derived from a regression analysis including data from all Vermont schools with 8th graders tested in fall 2005. For this regression analysis the Vermont DOE recommended that the percentage of households with less than $75,000 income for CY04 be used as it is the most reliable indicator of a school district's economic status. This variable became the basis for calculating expected performance scores (Appendix H). The expected performance scores for each school when compared with the actual performance produced delta scores for each school and team. These delta scores were used as the scalar measures of student performance reading, mathematics, and writing when controlled for socio-economic status.

The student performances on these tests for each teaching team were compared against scores to be expected for students with similar economic backgrounds statewide. The difference between the actual and expected student performance for each teaching team provided the basis for findings related to NECAP scores. This method controlled for the effects of the economic background of the students.

For this study, the NECAP performance scores are considered from two perspectives. The NECAP scores are criteria-referenced and reported at four levels of achievement—1, 2, 3 or 4. The high-cut NECAP scores combine all students that met the standard or met the standard with honors. On the NECAP scale of indicators the high-cut

scores include those at level 3 or 4. The low-cut scores combine those students that nearly met the standard, met the standard or met the standard with honors, i.e., NECAP levels 2, 3 or 4. Because the low-cut score sets a low threshold, there will be a higher proportion of students who meet this criterion than those who meet the high-cut criterion. Therefore the low-cut percentage score for a particular content area will be higher than the high-cut percentage score for the same content area.

Some findings in this study are based on dichotomous variables. Among these, the most notable is the dependent variable—a school's adequate yearly progress (AYP) status. The school's NECAP scores and other factors, such as high school completion rates, enable the Vermont Department of Education to determine adequate yearly progress for each school. The resulting school's AYP status is rated as either yes or no. When considering a finding based on school AYP status, it is important to keep in mind that this requirement of NCLB is a summative assessment of the whole school. Given that student performance on the teaching teams only contributes in part to the school's AYP status, this dichotomous variable is not directly tied to the teaching teams in this study. For example, the NECAP performance of students on a teaching team may meet or exceed the state's requirements for adequate yearly progress, but since completion rates for high school seniors in the year of this study were low for the same school, the school's AYP status would be no.

Political Considerations

The importance of considering a school's adequate yearly progress (AYP) entirely rests on its political currency. Prior to the NCLB Act of 2001, a school's AYP was rarely

considered by educators and it was entirely unknown to the public. AYP is now a common reference point and measure of school accountability as required by NCLB. NCLB imposes financial sanctions on schools not making adequate yearly progress towards the goal of all students meeting the standards for academic performance established by each state. School's that consistently fall short of AYP are subject to administrative control by the state. As a result, AYP is the summative assessment of the nation's public schools.

When holding schools accountable for students' progress, the general public and state legislature considers two statistics that are available on the VT DOE's website—the NECAP student performance scores at each grade level and the school's status regarding AYP. These performance measures are the outcome variables of this study, but only the NECAP scores can be linked to a teaching team. With this caveat in mind, teaching teams may consider those findings based on student NECAP performance more worthy of immediate consideration than those based on the school's AYP status. On the other hand, school administrators and board members will be required by the public to consider findings related to their school's AYP status of paramount importance. Small changes in NECAP performance for a school or class may be noteworthy to teachers and administrators, but the headline in the local newspaper will likely focus on the schools' AYP status. Did your school make AYP, or not?

This study found that AYP status does correlate positively with NECAP scores in reading and mathematics for students on the 44 participant teaching teams. Various cut points tested with the NECAP writing scores found no significant correlations with AYP status. Note that NECAP data was adjusted to control for household incomes in the

school district (see Chapter 3). For the results of chi-square tests with Yates' correction for continuity applied to NECAP scores for teaching teams and the school's AYP status, see Table 6.

Table 6. AYP School Status Compared to NECAP Scores for Students by Teaching Team (N = 44)

NECAP scores vs. AYP	Range	Cut-point	χ^2Yates
Reading (high-cut)	-.284 – .270	or = -.050	+10.32****
Reading (low-cut)	-.178 – .139	or = 0	+12.23*****
Math (high-cut)	-.185 – .309	or = 0	+5.14**
Math (low-cut)	-.194 – .199	or = 0	+7.21***
Writing (high-cut)	-.390 – .439	or = 0	+.01
Writing (low-cut)	-.266 – .148	or = 0	+.64

*$p < .05$. **$p < .025$. ***$p < .01$. ****$p < .005$. *****$p < .001$.

Factor Analysis

Factor analysis of the group dynamics survey, *How We Function as a Team,* revealed five factor clusters. These five group dynamics factors and their corresponding survey items can be seen in Table 7 and are summarized as follows:

1. Express what is important especially when we disagree. Although they may disagree, team member engage in lively debate. The most important and difficult issues are addressed without reservation.
2. Commit to the team. Team members openly admit their weaknesses, and apologize for their mistakes. For the good of the team, they are willing to make sacrifices of budget or time.

3. Work to include and support each other. Team members feel accepted and heard. They build on each other's ideas and take steps to make it safe to question the consensus.
4. Push each other to excellence. Team members challenge each other and expect every teacher to contribute equitably to the work of the team. They also hold each other accountable for the quality of their work.
5. Work to be on the same page. Team members work together so that team decisions genuinely represent and benefit from the ideas of each member. They conclude discussions with clear resolutions and leave meetings confident that all teammates are completely committed to the decisions reached, despite any initial disagreements.

These five factors were used to establish scaled group dynamics scores for each teaching team. A sixth factor, support, was a combination of commitment inclusion and mutual support. See factors number 2 and 3 in Table 7.

Factor analysis of the response data on the 55 items on the *Teaching Team Survey* revealed eleven factor clusters. These eleven team functioning factors and their corresponding survey items can be seen in Table 8 and are summarized as follows:

1. Extent of control. This factor gauges the extent of the teams control over rules, daily schedule for instruction and curriculum integration.

Table 7. The Five Factors of Team Dynamics and Corresponding Survey Items

Factors of Team Dynamics	Corresponding Survey Items
1. Express what is important especially when we disagree.	We are passionate in our discussions of issues. Team meetings are compelling, not boring. During team meetings, the most important—and difficult—issues are put on the table to be resolved.
2. Commit to the team.	We quickly and genuinely apologize to one another when we say or do something inappropriate or possibly damage to the team. For the good of the team, we willingly make sacrifices, such as budget or instructional time. We openly admit our weaknesses and mistakes.
3. Work to include and support each other.	We ensure that everyone feels accepted and heard. We take steps so that everyone feels safe enough to questions an apparent consensus. We try to find ways to use or build on everyone's ideas.
4. Push each other to excellence.	We challenge one another about our plans and approaches. We hold each other accountable for contributing equitably. We hold each other accountable for the quality of our work.
5. Work to be on the same page.	We leave meetings confident that our teammates are completely committed to the decisions reached, despite any initial disagreements. We end discussions with clear, specific resolutions and calls to action. We assess whether we have a shared understanding of what we're working on. We work together so that team decisions genuinely represent and benefit from the ideas and standards of each team member.

2. Students influencing regular classroom learning. Students help develop rules and are involved in selecting their learning modes and planning activities. All students and teachers participate in team meetings.
3. Students planning special activities. These special activities include field trips and celebrations.

Table 8. The Eleven Factors of Team Functioning and Corresponding Survey Items

Team Functioning Factors	Corresponding Survey Items
1. Extent of control.	Team rules. Routine daily schedule. Adjusting schedule to facilitate special activities or projects. Curriculum integration. Scheduling how instructional time is divided up among team members.
2. Students influencing regular classroom learning.	Develop rules collaboratively with students. Involve students in selecting learning modes. Involve students in planning activities. Hold team meetings including all students and teachers.
3. Students planning special activities.	Involve students in planning field trips. Involve students in planning celebrations.
4. Planning instruction using portfolios and teacher assessments.	Vermont writing portfolios. Vermont mathematics portfolios. Student performance on teacher-designed assessments.
5. Planning instruction using state grade level expectations and tests.	Vermont testing. Vermont Framework of Standards for Student Performance. Vermont Grade Level Expectations (GLE's) for Student Performance.
6. Communicate with parents orally.	Telephone contact. Parent Nights. Does the team conference with a parent?

Continued, next page.

Table 8, cont'd.:

Team Functioning Factors	Corresponding Survey Items
7. Communicate with parents electronically.	Announcements via email or website. Homework via hotline, email or website.
8. Meet with special education or E.S.L teachers.	How often do you meet with special education teachers? How often do you meet with ESL teachers?
9. Meet with counselor, communicate with other staff.	How often do you meet with guidance counselors? How often does your team share ideas, practices or decisions with non-team staff?
10. Coordinate curriculum and assessment.	How often does your team coordinate scheduling homework assignments? How often does your team coordinate scheduling tests? How often does your team coordinate scheduling quizzes? How often does your team coordinate scheduling major projects? How many interdisciplinary thematic units does your team teach per year?
11. Coordinate class management and instruction.	Grouping and regrouping students for instruction. Scheduling how instructional time is divided up among team members. How often does the team handle discipline problems together? How often does your team review team goals and objectives?

4. Planning instruction using portfolios and teacher assessments. The team relies on Vermont's writing portfolios, mathematics portfolios and teacher-designed assessments to plan instruction.

5. Planning instruction using state grade level expectations and tests. The team relies on Vermont's statewide tests and grade level expectations for student performance.
6. Communicate with parents orally. The team communicates with parents directly via Parent Nights, parent conferences and telephone contacts.
7. Communicate with parents electronically. The team uses a telephone hotline, email or a website to post announcements and homework.
8. Meet with special education or E.S.L teachers. The team meets regularly with special education and ESL teachers.
9. Meet with counselor, communicate with other staff. The team meets regularly with guidance counselors and non-team staff to share ideas, practices or decisions.
10. Coordinate curriculum and assessment. The team coordinates the scheduling of homework assignments, tests, quizzes, and projects and uses interdisciplinary thematic units for instruction.
11. Coordinate class management and instruction. The team reviews team goals, schedules, groups and regroups students for instruction. Team members collaborate to address discipline problems.

These eleven factors were used to establish scaled team functioning scores for each teaching team.

Results

The data analyzed yielded a number of significant findings. These findings are the result of two methods to test data comparing pairs of variables. Pearson correlations and chi-squares using Yates correction for continuity were calculated as appropriate for the variables' data. The results are presented in two sections: (a) school and teaching team demographics, and (b) teaching team function, practices and activities.

School Demographics and Teaching Team Composition

In Vermont, Schools with Larger Team Enrollments Perform Better than Schools with Smaller Teams

Teams with 70 or more students correlate positively with the school's AYP status, χ^2Yates$(2, N = 44) = 4.03, p < .05$. Team enrollment ranged from 15 to 110. See Table 9.

Table 9. Chi-Square for the Relationship Between the Student Enrollment per Teaching Team and the School's AYP Status

	Teams with < 70 students	Teams with ≥ 70 students
School met AYP	14	18
School did not meet AYP	10	2

Cell entries are the number of teams meeting the row and column heading specifications.

χ^2 with Yates' Correction for Continuity = 4.03, $p < .05$.

When considering AYP status no significant correlations could be found for any school-wide indicators of size, including school enrollment, student/teacher ratio, student/administrator ratio and teacher/administrator ratio.

When considering NECAP scores, this was also the case, except for two correlations that met the study's alpha: (a) School enrollment correlates positively with NECAP high-cut scores in mathematics, $r = .30$, $N = 44$, $p < .05$, with a range of 78–712, and (b) the number of students on the team taking the NECAP test correlated positively with the NECAP low-cut scores for writing, $r = .31$, $N = 44$, $p < .05$ with a range 5–81.

Strategically Assigning Teachers to Teams by Balancing Personalities Correlates Negatively with Student Performance

Teaching teams assigned by principals who take careful consideration of teacher personalities and temperaments do not perform better than teaching teams in other schools. The "principal assigns teams by balancing teacher personalities or temperaments" correlates negatively with student performance in mathematics as indicated by low-cut NECAP scores, $r = -.31$, $N = 44$, $p < .05$, two tails.

When compared by school, the extent to which a principal "assigns teams by balancing teacher personalities or temperaments" also correlates negatively with a school's AYP status, $\chi^2\text{Yates}(2, N = 31) = -3.89$, $p < .05$. See Table 10. This *School Demographics Survey* item asked the principal, "To what extent does this factor affect assigning teachers to team?" Responses ranged from 1 (little or none) to 4 (a great deal).

A Special Educator on the Teaching Team Correlates Negatively with Student Performance

The presence of a special educator on the teaching team correlated negatively with student performance in writing as indicated by both the high-cut and low-cut scores on the NECAP tests, $r = -.33$, $n = 39$, $p < .05$, and $r = -.32$, $n = 39$, $p < .05$, respectively.

Table 10. Chi Square for the Relationship Between Principals Who Assign Teams by Balancing Teacher Personalities or Temperaments and the School's AYP Status

	Teacher personality and temperament did not heavily influence team assignments (rated 1or 2)	Teacher personality and temperament heavily influenced team assignments (rated 3or 4)
School met AYP	21	3
School did not meet AYP	3	4

Cell entries are the number of schools meeting the row and column heading specifications.

χ^2 with Yates' Correction for Continuity = -3.89, $p < .05$.

A similar negative correlation with student performance in mathematics further supports this finding. For NECAP high-cut math scores a special educator on the teaching team correlated negatively, $r = -.35$, $n = 39$, $p < .05$.

Teaching Team Function, Practices and Activities

Three Aspects of the Internal Dynamics of a Teaching Team Correlate Positively with Student Performance

The confidential survey comparing the internal dynamics of the teaching teams reveal three attributes that correlate positively with student performance. These reflect positive relations among team members who focus professionally on their work together.

Two internal dynamics variables correlate positively with high student performance in reading as indicated by the low-cut NECAP scores. These are: (a) We hold back from seeking credit for our own contributions, $r = +.43$, $n = 37$, $p < .01$, two

tails, and (b) we hold each other accountable for contributing equitably, $r = +.32$, $n = 39$, $p < .05$, two tails.

A strong positive correlation with high student performance in writing as indicated by the low-cut NECAP scores was also found for the internal team dynamics variable, "We hold each other accountable for the quality of our work," $r = +.45$, $n = 36$, $p < .01$, two tails.

Teaching Teams that Give Students Greater Roles in Decision-Making Correlate Positively with Student Performance in Reading and Mathematics

Four areas of student decision-making that correlate positively with student performance are students selecting learning modes, making rules, influencing instruction and planning for celebrations. See Table 11.

Table 11. Measures of Student Decision-making Influence on the Team vs. Student Performance (n = 39)

Student decision-making	NECAP performance	Correlation *(r)*
Students select learning modes.	Reading (high-cut)	+.33*
Team develops rules with students.	Math (high-cut)	+.39*
Students influence instruction.	Math (high-cut)	+.38*
Joint planning for celebrations	Math (high-cut)	+.32*

*$p < .05$.

Teams that involve students in selecting learning modes for instruction correlate positively with reading performance as indicated by NECAP high-cut scores, $r = +.33$, $n = 39$, $p < .05$, two tails.

Student involvement in instruction and team decisions correlates positively with strong mathematics performance. Specifically, the independent variables that correlate with NECAP high-cut scores for mathematics include: (a) The team develops rules collaboratively with students, $r = +.39$, $n = 39$, $p < .05$, two tails, (b) students influence regular classroom instruction, $r = +.38$, $n = 39$, $p < .05$, two tails, and (c) joint planning with students, $r = +.32$, $n = 39$, $p < .05$, two tails. Note that "joint planning with students" is the average of two factors —the extent to which "the team develops rules collaboratively with students" and "the team involves students in planning celebrations."

Student performance in writing revealed similar correlations, but these did not meet the .05 standard for statistical significance required by this study. Specifically, students influencing regular classroom instruction correlated positively with NECAP high-cut scores in writing with a coefficient of $r = +.30$, $n = 39$.

A Teaching Team's Electronic Communications with Parents Correlates Positively with Student Performance

A number of independent variables correlate positively with the school making adequate yearly progress (AYP) as defined by NCLB and the VT DOE. Among these, the "team makes announcements via email or website" is the strongest with a correlation χ^2Yates $(2, n = 39) = 4.12$, $p = .05$. See Table 12.

The extent to which a "team makes announcements via email or website" also correlates positively with student performance in mathematics as indicated by the low-cut NECAP scores, $r = +.34$, $n = 39$, $p < .05$.

Table 12. Chi Square for the Relationship Between Team's Extent of Use of Email or Website to Make Announcements and the School's AYP Status

	Announcements made via email or website	
	Never or rarely	More and weekly
School met AYP	14	13
School did not meet AYP	11	1

Cell entries are the number of teams meeting the row and column heading specifications.
χ^2 with Yates' Correction for Continuity = 4.12, $p < .05$.

Parent Volunteers in School Correlates Positively with Student Performance in Reading and Mathematics

The number and frequency of parent volunteers in school to help the team correlates positively with reading performance as indicated by the NECAP high-cut scores, $r = +.34$, $n = 39$, $p < .05$, two tails. Parent volunteers also correlates with high performance in mathematics as indicated by the high-cut NECAP scores, $r = +.35$, $n = 39$, $p < .05$, two tails.

Indicators of a Teaching Team's Distinct Identity Correlate Negatively with Student Performance

A variety of practices and activities that establish a distinct team identity negatively correlate with student performance as measured by NECAP testing and AYP status for the school. The results of chi-square tests comparing team attributes with AYP status appear in Table 13.

Table 13. Chi-square Correlations for Team Identifiers vs. AYP Status

Team Identifiers vs. AYP Status	Range	Cut-point	χ^2Yates	*N*
Apparel	0 – 1	< 1	-.10	39
Awards or Recognitions for Students	0 – 1	< 1	-1.86	39
Bulletin Board	0 – 1	< 1	-.02	39
Logo	0 – 1	< 1	-2.53	39
Mission	0 – 1	< 1	-.01	39
Motto	0 – 1	< 1	-7.40***	39
Philosophy	0 – 1	< 1	-.01	39
Song	0 – 1	< 1	-.21	39
Team Things	0 – 7	< or = 1	-2.51	39
Team Things except Philosophy	0 – 6	< or = 1	-3.96***	44
Team Things except Philosophy & Bulletin Board	0 – 5	< or = 1	-4.87***	44

***$p < .01$.

Considering the variables that correlate negatively with a school's AYP status reveals that having a team motto does not help. Ten teams in this sample reported having a motto, χ^2Yates (2, n = 39) = -7.40, p = .01. In addition, other team things including mission (11 teams), philosophy (11 teams), logo (6 teams), song (3 teams), bulletin board (12 teams), apparel (4 teams) and awards (18 teams) do not correlate positively with a school's AYP status. The combined factor "Team Things" correlates negatively with AYP status but is not significant, r = -.2.51, n = 39.

Team Things excluding team philosophy and a school's AYP have a stronger negative correlation that is significant, χ^2Yates (2, N = 44) = -3.96, p = .01. Team Things except Philosophy is defined as the number sum of identifying attributes a team has including a written team mission, team logo or mascot, team song, team bulletin board, team apparel, and team awards or recognitions for students.

Team Things excluding both team philosophy and bulletin board also correlates negatively with a school's AYP status, χ^2Yates (2, N = 44) = -4.87, p = .01. Team Things except Philosophy and Bulletin Board is the number sum of identifying attributes including a written team mission, team logo or mascot, team motto, team song, team apparel, and team awards or recognitions for students.

Yates' corrected chi-square tests compared these team identifiers with student performance on the NECAP tests. Table 14 summarizes the mixed results of these tests. For team apparel, awards, motto, and song, no correlations with NECAP scores meet this study's alpha. Other attributes of team identity correlate positively with student performance in writing. These follow after Table 14.

1. Team bulletin board compared with NECAP low-cut scores in writing, χ^2Yates (2, n = 39) = +5.39, p = .025,
2. Team written mission compared with NECAP high-cut scores in writing, χ^2Yates (2, n = 39) = +5.00, p = .05,
3. Team philosophy compared with NECAP high-cut scores in writing, χ^2Yates (2, n = 39) = +5.71, p = .05,
4. The sum of all team identifiers excluding philosophy compared with NECAP high-cut scores in writing, χ^2Yates (2, N = 44) = +6.13, p = .02, and

Table 14. Chi-square Correlations for Team Identifiers vs. Student Performance on NECAP Tests

Team identifiers vs. NECAP tests	Range	Cut-point	χ^2Yates	*N*
Apparel	[a]	[a]	[a]	39
Awards or Recognitions for Students	[a]	[a]	[a]	39
Bulletin board vs. Low-cut writing	-.266 – .148	< .035	+5.39**	39
Logo vs. Low-cut mathematics	-.194 – .199	< -.001	-4.00*	39
Mission vs. High-cut writing	-.390 – .439	< .043	+5.00*	39
Motto	[a]	[a]	[a]	39
Philosophy vs. High-cut writing	-.390 – .439	< -.032	+5.71**	39
Song	[a]	[a]	[a]	39
Team Things	[a]	[a]	[a]	39
Team Things except Philosophy vs. High-cut writing	0 – 6 -.390 – .439	< 1 < .042	+6.13**	44
Team Things except Philosophy & Bulletin Board vs. High-cut mathematics	0 – 5 -.185 – .309	< or = 3 < or =.039	-4.41*	44
Team Things except Philosophy & Bulletin Board vs. High-cut writing	0 – 5 -.390 – .439	< 1 < or =.042	+6.39**	44

[a] indicates no correlations reached alpha for this variable. *$p < .05$. **$p < .025$.

5. The sum of all team identifiers excluding philosophy and bulletin board compared with NECAP high-cut scores in writing, χ^2Yates (2, N = 44) = +6.39, p = .02.

Two attributes of team identity correlate negatively with student performance in mathematics. These are: (a) Team logo correlates with NECAP low-cut scores in mathematics, χ^2Yates (2, n = 39) = -4.00, p = .05, and (b) the sum of all team identifiers excluding philosophy and bulletin board correlates with NECAP high-cut scores in mathematics, χ^2Yates (2, N = 44) = -4.41, p = .05.

A Teaching Team's Degree of Control Over Three Elements of Instruction Correlates Negatively with AYP Status

Teaching team elements that correlate negatively with a school's AYP status involve the team's control over a combination of instructional responsibilities—team rules, instructional time and curriculum integration. See Table 15. Schools whose teaching teams report having control over team rules, instructional time and curriculum integration are not more likely to achieve AYP than those schools with teams reporting less control of these factors. These three measures of team decision-making are combined in the Control2 factor. As a combined factor, Control2 correlates negatively with a school's AYP status, χ^2Yates (2, n = 39) = -.7.67, p < .01.

Considered separately, only the team controls rules factor significantly correlates negatively with AYP status, χ^2Yates (2, n = 39) = -4.94, p < .05.

Table 15. Teaching Team Activities and Responsibilities vs. AYP Status (n = 39)

Team Element	Range	Cut-point	χ^2Yates
Control2	1 – 4	< or = 3	-7.67***
Team controls rules	1 – 4	< or = 3	-4.94*
Instructional time	1 – 4	< or = 3	-1.22
Curriculum integration	1 – 4	< or = 2	-1.16
Advisory minutes/wk.	0 – 60 min./wk.	> 0 min./wk.	-0.02
Advisory minutes/wk.	0 – 60 min./wk.	< or = 15 min./wk.	-2.51
Advisory minutes/wk.	0 – 60 min./wk.	< or = 30 min./wk.	-9.15****

*$p < .05$. ***$p < .01$. ****$p < .005$.

Spending Too Much Time in Advisory Groups Correlates Negatively with AYP Status

The data on advisory groups yield mixed results (Table 15). Seventy-two percent, or 28 out of 39 of teaching teams reported having advisory groups. Teaching teams devoting more than 30 minutes per week correlated negatively with the school's AYP status, χ^2Yates (2, $n = 39$) = -9.15, $p < .005$. The negative correlation for advisory groups meeting more than 15 minutes per week does not meet alpha, χ^2Yates (2, $n = 39$) = -.2.51. The correlation comparing AYP status with teaching teams having no advisory groups was not significant. No significant correlations were found for NECAP scores and advisory groups.

The Use of Teacher-Made Assessments to Plan Instruction Correlates Negatively with Student Performance

A number of teaching team elements that pertain to planning for instruction correlate negatively student NECAP performance in reading and mathematics (Table 16).

Table 16. Teaching Team Planning Elements vs. NECAP Scores (n = 39, p < .05)

Planning Element	NECAP scores	*r*
Teacher Assessments	Reading (high-cut)	-.34
Teacher Assessments	Math (high-cut)	-.38
Teacher Assessments	Math (low-cut)	-.43
Team Relies On	Math (low-cut)	-.33
Team Relies On2	Math (high-cut)	-.33
Team Relies On2	Math (low-cut)	-.38

The extent to which the team relies on teacher-designed assessments to plan instruction correlates negatively with student performance in reading as indicated by the NECAP high-cut scores, $r = -.34$, $n = 39$, $p < .05$. This same variable also correlates negatively with student performance in mathematics. The team relies on teacher-designed assessments to plan instruction negatively correlates with both the high-cut and low-cut NECAP mathematics scores at $r = -.38$, $n = 39$, $p < .05$, and $r = -.43$, $n = 39$, $p < .01$, respectively.

The composite "Team Relies On factor" is the average of four independent variables. This Team Relies On factor averages the teaching teams responses indicating the extent to which they use teacher-designed assessments, *Vermont Writing Portfolios, Mathematics Portfolios* and *Grade Level Expectations (GLEs)* to plan instruction. The

Team Relies On factor may correlate negatively with low-cut NECAP math scores because it includes the teacher-designed assessments variable, $r = -.33$, $n = 39$, $p < .05$.

However, "Team Relies On2", a factor based on the composite Team Relies On excluding the teacher-designed assessment variable, yielded similar results. Teaching teams using Vermont's writing portfolios, mathematics portfolios and GLEs to plan instruction correlated negatively with student performance in mathematics for both high-cut and low-cut NECAP tests, $r = -.33$, $n = 39$, $p < .05$, and $r = -.38$, $n = 39$, $p < .05$, respectively. Teaching teams who report using the *Vermont Math Portfolios, Vermont Writing Portfolios* and the *Vermont Grade Level Expectations* to plan instruction are not getting the intended results in mathematics performance on the NECAP tests.

As a single measure, the extent to which a teaching team uses Vermont's GLEs to plan instruction correlates negatively with student performance in most of the NECAP subtests, but these correlations do not meet alpha level. These results are surprising because the NECAP statewide tests, commissioned by Vermont, New Hampshire and Rhode Island, are designed to assess student progress on the *Grade Level Expectations* for student learning adopted by all three states.

A Brief Summary of the Results

When the findings, previously reported in isolation, are considered in various combinations, certain commonalities are sufficiently notable to fall into thematic groups. These three groups of findings speak to the teaching teams' (a) relationships with students, parents and colleagues, (b) characteristics and practices, or (c) formation and

composition. The study's findings are reiterated in this way to provide a useful summary for future reference.

Relationships with Students, Parents and Colleagues

Teaching Teams that Give Students Greater Roles in Decision-Making Correlate Positively with Student Performance in Reading and Mathematics

How much teaching teams collaborate with students in making decisions that affect their learning correlates positively with performance in reading and mathematics. The three domains of decision-making found to be correlative are (a) developing team rules, (b) influencing classroom instruction, and (c) planning team celebrations.

Communications with Parents That are Engaging and Empowering Improves Student Performance

Two measures of parental involvement with the teaching teams were significant: (a) The team makes announcements via email or website correlate positively with the school making AYP and student performance in mathematics, and (b) the number and frequency of parent volunteers in school correlates positively with student performance in reading and mathematics.

Collegial Relations Among Teachers are Critical to Team Success

Three descriptors of the internal dynamics of a teaching team correlate positively with student performance: (a) We hold back from seeking credit for our own contributions, (b) we hold each other accountable for contributing equitably, and (c) we hold each other accountable for the quality of our work.

Team Characteristics and Practices

Indicators of a Distinct Team Identity Correlate Negatively with Student Performance and AYP Status

A combined factor including six indicators of team identity, correlates negatively with a school's AYP status. The indicators of a teaching team's distinct identity included in this finding were motto, logo or mascot, mission, song, apparel, and team awards or recognitions for students. Interestingly, two indicators not included in this negative correlation were a team philosophy and bulletin board.

Two Teaching Team Elements of Planning for Instruction Correlate Negatively with Student Performance in Reading and Mathematics

Perhaps surprisingly, these are: (a) The team relies on teacher-designed assessments to plan instruction, and (b) the team reports using Vermont's writing portfolios, mathematics portfolios and grade level expectations to plan instruction.

The Extent of Control Teaching Teams Have Over Key Aspects of Instruction Correlates Negatively with a School's AYP Status

The three instructional areas involve team rules, curriculum integration and scheduling.

Advisory Groups do not Correlate Positively with Student Performance in Reading, Mathematics or Writing

The only correlation found relating to advisory groups was that teaching teams devoting more than 30 minutes per week correlated *negatively* with the school's AYP status. Whether or not teaching teams employed advisory groups was not significant. Teaching teams with advisory groups compared to teaching teams without advisory groups did not yield significant correlations with student performance or the school's AYP status.

Team Formation and Composition

In Vermont, Schools with Larger Team Enrollments Perform Better than Schools with Smaller Teams

Teaching teams with 70 or more students correlated *positively* with the school's AYP status. However, no additional correlations that reached alpha could be found for any school-wide measures of size, including school enrollment, student/teacher ratio, student/administrator ratio or teacher/administrator ratio when compared with AYP status. When considering NECAP scores, this was also true, except for two correlations that met the study's alpha. These are: (a) School enrollment correlates positively with

NECAP high-cut scores in mathematics, and (b) the number of students taking the NECAP tests correlates positively with the NECAP low-cut scores for writing.

Teaching Teams Assigned by Principals Who Report Careful Consideration of Teacher Personalities and Temperaments do not Perform Better than Other Teaching Teams

Two significant negative correlations support this finding: (a) The extent to which a principal assigns teams by balancing teacher personalities or temperaments correlates negatively with student performance in mathematics, and (b) the extent to which a principal assigns teams by balancing teacher personalities or temperaments correlates negatively with a school's AYP status.

A Special Educator on the Teaching Team Correlates Negatively with Student Performance

While a significant correlation for NECAP reading performance was not found, a special educator on the teaching team correlated negatively with student performance in mathematics and writing.

Summary

This chapter presented the results of this study first presented by demographic and functional categories and then reiterated them briefly in thematic groups. In the following chapter these groups will focus the interpretation and discussion of the results as they are viewed through the lenses of the conceptual frameworks—normative models, empirical works and the theory of team dynamics—found in Chapter 2.

CHAPTER 5

ANALYSIS OF FINDINGS

The intent of this study was to find the characteristics of teaching teams that affect student performance. The previous chapter provided evidence that a variety of teaching team attributes and activities correlate with student performance in reading, writing and mathematics. These correlations provided insights for practitioners, principals and policy makers.

This chapter provides an analytical interpretation of the study's results. The process of comparing the results of the study's statistical analyses through the lenses of prior research and theory provides important insight into teaching teams and their work to improve student performance in middle schools. Using the study's conceptual framework as such a lens will explain more clearly how the results answer the question—What characteristics and practices of teaching teams affect student performance? Additionally, when viewed through the three lenses of the study's conceptual framework (Figure 2), the findings may provide greater meaning or suggest gaps in the framework that warrant reconsideration and further development.

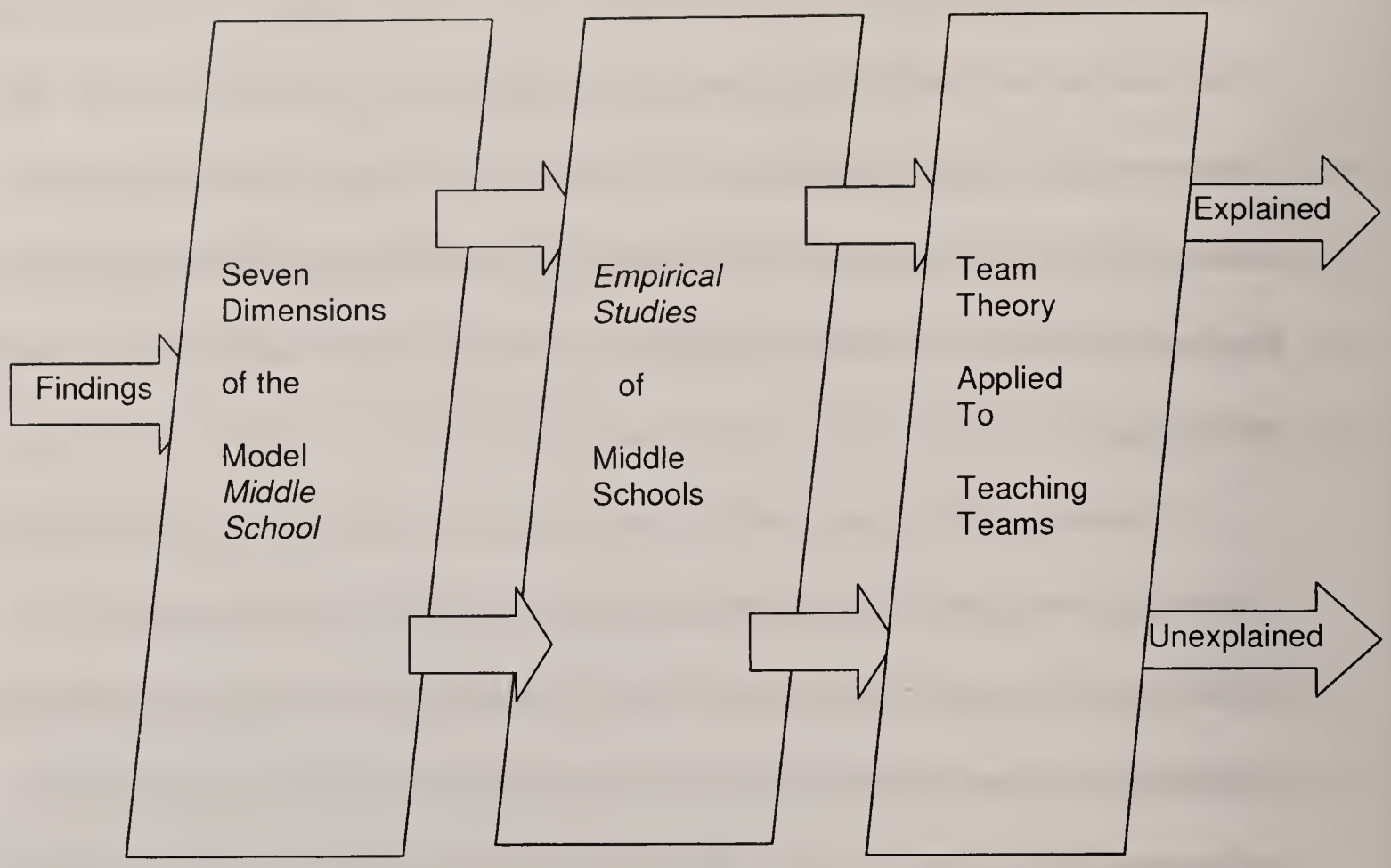
The Conceptual Framework Lenses Revisited

Among other sources, *This We Believe* and *Turning Points* are the most widely cited publications that describe a normative model for middle schools. The characteristics of effective middle schools advocated by the National Middle School Association (NMSA) in *This We Believe* set the mark for developmentally appropriate instruction of early adolescents. *Turning Points* provides design elements for effective

schools that parallel the characteristics sought by the NMSA. The two sets of guidelines were conceived to insure educational quality *and* equity are synthesized into the seven dimensions of the middle school model. When viewed in the context of the nation's latest legislative call for school accountability, the No Child Left Behind Act (NCLB), these seven dimensions provide a normative conceptual lens for interpreting the findings of this study.

Empirical studies, most notably *The Middle School Initiative* conducted by the Center for Prevention, Research and Development (CPRD), support the efficacy of NMSA's middle school model. Sponsored by the Kellogg Foundation, the CPRD studies in Michigan, Arkansas, and Alabama, found teaching teams and schools that fully implemented the guidelines of *This We Believe* enjoyed improved student performance both academically and socially (Mertens et al., 1999, and Flowers et al., 1999).

The study was designed to answer the research question—What characteristics and practices of teaching teams affect student performance?—by including consideration of the internal dynamics of teaching teams. The collegial relations among teaching team members were measured and compared with student performance. The conceptual framework used to examine the results of this study combines the normative, empirical, and theoretical (Figure 2). Based on the literature reviewed in chapter two, this framework was conceived to apply to any element of teaching teams that might affect student performance.



Seven Dimensions lens based on design elements of *Turning Points* and characteristics from *This We Believe.* Team Theory lens based on work of J. Matusak and P. Lencioni.

Figure 2. Teaching team conceptual framework with three lenses used to examine and explain the findings.

When the results are objectively reviewed through the three lenses of the conceptual framework they fall into two groups—those predicted by the framework, and those for which there must a set of alternative explanations. This latter group of findings points to possible limitations of the framework. Revisions of the normative model and team theory lenses will be suggested to improve the prognostication power of the study's conceptual framework.

The results concerning relationships with students, parents, and colleagues are predicted by the framework. They corroborate those found by numerous researchers in the CPRD middle school studies and those cited by NMSA in *This We Believe.* Included in this group are three attributes of collegial relations that correlate positively with

student performance. These results are consistent with team theory. Educators who are committed to the exemplary practices advocated by NMSA will find these results reassuring because these findings match their conceptions of professional best practice.

Advocates of best practice for middle level education will find the second group of findings more provocative. This study found a number of characteristics and practices of teaching teams that correlate negatively with student performance. Although these elements are consistent with NMSA's guidelines for best practice, they do not link positively with student performance in reading, mathematics, and writing.

The search for added meaning would not be complete without considering a third group of results. Most of the correlations between the thirty-three elements of teaching teams examined and student performance in reading, mathematics, and writing were not statistically significant. Reviewing these findings of no effect will provide contextual perspective and clues to help determine what the statistically significant findings really mean or provide fodder for future research.

Once these three groups of results are explained and interpreted, reconsidering the conceptual framework may help resolve any ambiguities caused by contradictory results. This reflective process will also bring greater meaning to these findings as a coherent body of work. In addition, this process of reconsideration may lead to reforming the conceptual framework for teaching teams. My report on this reformation at the end of the chapter provides a new framework for future research. Subsequent research using this new framework may provide further clarification and understandings of my findings.

Examining the Results Using the Teaching Team Framework

Explanation of each result using the conceptual framework follows in the three groups suggested by the summary of findings in Chapter 4: (1) Relationships with Students, Parents and Colleagues, (2) Team Characteristics and Practices, and (3) Team Formation and Composition.

Relationships with Students, Parents and Colleagues

The middle school model calls for seven inter-connected dimensions of teaching and learning: (1) curriculum and assessment, (2) differentiated instruction, (3) student counseling and support, (4) school culture, (5) philosophical commitment to adolescents, (6) health and safety, and (7) community connections. Large empirical studies by the CPRD's Middle School Initiative concluded that teaching teams fully implementing the middle school model realized significant academic improvement by their students.

Teaching Teams that Give Students Greater Roles in Decision-Making Correlate Positively with Student Performance in Reading and Mathematics

This group of four findings provides insights for developing effective teacher student relationships. They are consistent with three of the dimensions of the middle school model—curriculum and assessment, differentiated instruction, and school culture. Teaching teams that involve students in decisions related to their learning correlated positively with higher student performance. Four specific areas of decision-making are significant: (1) students select learning modes for instruction, (2) the team develops rules

with the students, (3) students influence instruction, and (4) teachers engage students in joint planning for celebrations.

The first of these correlates positively with reading performance, while the latter three correlate with higher performance in mathematics. These findings support the curriculum and assessment dimension of the middle school model that calls for a curriculum "relevant to adolescents' concerns, and based on how students learn best" (Erb, 2001, p. 3). They also support the model's differentiated instruction call for "varied teaching and learning approaches" (Erb, 2001, p. 3). The school culture dimension of the model recommends that schools be "governed democratically" in "a positive school climate" (Erb, 2001, p. 3).

This study's findings for the positive effects of empowering students to help make team decisions are corroborated by other empirical studies. Bishop and Boyer (2004) analyzed young adolescents' perceptions of effective teaching teams. Using student journal writing, this qualitative study examined the *Turning Points 2000* principle that adolescents are thoughtful and perceptive enough to give teachers and policy-makers valuable insights about their schools (Jackson & Davis, 2000). They found that students on effective teaching teams "spoke of long-term relationships and of a democratic learning environment that honored their voices and empowered them as learners" (Bishop & Boyer, 2004, p. 8). Bishop's effective teaching teams held student-led team meetings at the beginning and end of each day providing an opportunity for students to voice their opinions. As a result of these team meetings "Students and teachers together shared the responsibility for creating a safe and comfortable learning environment" (p. 10). They noted "a shift in power away from the conventional sole authority of the teacher to a

more democratic learning environment with shared decision making among students and teachers" (p. 9). Bishop and Boyer concluded, "When teachers invite student collaboration in setting goals, designing curricula, and governing their team; many students perceive positive personal changes and growth" (p.16). Students in their study "exerted their independence, as they learned to take responsibility for their own learning through setting goals, creating learning products, and reflecting on their learning" (p. 12).

The results of this study add quantitative evidence to support the findings of Bishop and Boyer that adolescents benefit when teachers and students share responsibility for creating the learning environments. Specifically, students scored higher in mathematics and reading when the teaching team gave them a greater role in making decisions about their team and their learning.

A Teaching Team's Electronic Communications with Parents Correlates Positively with Student Performance

Family and community partnerships are essential aspects of the seventh dimension, community connections. This study found two teaching team practices that involve communications with parents predict higher student performance in reading and mathematics. These are entirely consistent with both the normative model and empirical studies previously cited. In describing the model middle school, Erb reminds teachers of their responsibility to develop positive relations with parents.

> It is particularly important for middle level educators to understand how school–family–community partnerships are linked to other recommended elements (the seven dimensions) so that parent involvement is not something extra separate, or different from the *real work* of a school. (Erb, 2001, p. 50)

Flowers and her colleagues, Mertens and Mulhall, researchers for the Middle Start Initiative, found that interdisciplinary teams increased parental contact and student achievement (Flowers et al., 1999). The first teaching team practice found by this study is "the team makes announcements via email or website" correlates positively with student performance in mathematics. Teaching teams that communicate with their students and parents using contemporary telecommunications realize better student performance in NECAP mathematics and their school's AYP status. Student performance in mathematics may have benefited from electronic posting of daily homework assignments for math classes. When parents know more about the teaching team's instructional goals they may be more inclined to volunteer in the school.

The second team practice found by this study is the number and frequency of parent volunteers helping the teaching team correlates positively with student reading and mathematics performance. This finding supports the middle school model's community connections dimension suggests that teaching teams should make concerted efforts to collaborate with parents and encourage them to volunteer in their classes, to attend team celebrations, and to help with fund-raising activities and field trips. Teaching teams have an influential role in the extent of parent volunteerism and this volunteerism has a positive influence on student achievement.

Three Aspects of the Internal Dynamics of a Teaching Team Correlate Positively with Student Performance

In considering teaching team behavior and function, the remaining positive correlations with student performance involved the internal dynamics of the team. According to team theory, "only when each member accepts credit for successes and

equal responsibility for failures will the team be creative and dynamic" (Matusak, 1997, p. 73). Although this study examined a broad range of internal dynamics pertaining to teaching teams, only three of the twenty-four items measuring internal team dynamics correlated positively with student performance, two for reading and one for writing. "We hold back from seeking credit for our own contributions, but are quick to point out those of their teammates," and "We hold each other accountable for contributing equitably," correlate positively with student performance in reading, while "We hold each other accountable for the quality of our work" correlates positively with student performance in writing.

Taken together, these three characteristics of internal team dynamics place a high value on team integrity and professional accountability. The importance of team integrity and professional accountability for teaching teams is anticipated by the theoretical work of Matusak, Lencioni, and Eiseman. Matusak's highest stage of team building calls for a "perfect balance between individual excellence and team harmony" (Matusak, 1997, p. 75). According to Eiseman, each member must feel accountable to colleagues for achieving results and be perceived by their teammates as contributing a fair share to the team's work (personal conversation Eiseman, 2005). Lencioni's application of team dynamics analysis to corporate management teams also supports two of the three internal team characteristics found by this study to affect student performance: accountability for equitable contributions to the team, and accountability for the quality of work. According to Lencioni, teams functioning at the highest level are susceptible to dysfunction for two reasons—their inattention to results, and their avoidance of accountability (Lencioni, 2002).

This study's third finding related to internal team dynamics does not enjoy such clear support in team theory. "We hold back from seeking credit for our own contributions, but are quick to point out those of our teammates" correlated positively with student performance. While few can argue against the observation attributed to President Harry Truman, "It is amazing what you can accomplish if you do not care who gets the credit," no direct references to the role of individuals' humility and team success were found in my review of the literature for this study. Bales writes that the roles and interaction of the individuals on the team must be inclusive, but he does not mention holding back from seeking credit for individual contributions to the team's effort (Bales, 1970). Although Lencioni does not directly address the role of humility on corporate management teams, it can be derived from Lencioni's discussion of his fifth dysfunction: inattention to results. To overcome this team dysfunction Lencioni suggests, "A team (that) focuses on collective results…benefits from individuals who subjugate their own goals/interests for the good of the team" (Lencioni, 2002, p. 218). Lencioni may be describing a form of strategic relationship building among team members that is based on a degree of *humilitas*—a professional attitude of emphasizing the accomplishments of the team rather than taking personal credit. This study's finding that individual members of the team should hold back from seeking credit for their contributions to the team's success, points to a small gap in Lencioni's team theory when applied to teaching teams. When considering teaching teams, Lencioni's five characteristics of effective teams may be revised to include *humilitas*. I recommend that Lencioni's first characteristic of effective teams—trusting each other—be expanded to include for clarification,

"individual members also hold back from seeking credit for their contributions, but are quick to point out those of their teammates."

While consistent with Lencioni's work, this revision underscores the importance of teaching team members subordinating their preferences and individual goals to group needs and mutually developed group goals. While this willingness to subordinate has elements in common with the conventional understanding of humility, the term *humilitas* is used to convey important differences. Perhaps the most important is that it is possible for individuals to be highly self-confident and to share their opinions of their value to the group with colleagues, but still subordinate their preferences and individual goals to mutually developed team goals. This revision of the theoretical lens of this study's conceptual framework is necessary to explain the role of strategic relationship building based on individual members holding back from seeking credit for their contributions, while quickly pointing out the contributions of their teammates, in the internal dynamics of effective teaching teams.

When viewed through the normative lens of the teaching team framework, the three characteristics of internal team dynamics associated with student performance are predictable. The school culture dimension of the middle school model calls for "a shared vision" and "high expectations for all" (Erb, 2001, p. 3). This study's two findings that the degree of accountability among team members affects student performance are consistent with Erb's call for high expectations for all that applies to students and teachers alike. Accountability among colleagues requires a shared vision and goals for the teaching team. No reference to the characteristics of internal team dynamics appears in the middle school models and certainly none as specific as the third finding for the

importance of strategic relationship building based on *humilitas* among teaching team members.

This study's findings regarding three characteristics of internal team dynamics challenge the normative lens of the teaching team conceptual framework. The importance of internal team dynamics, specifically, accountability for sharing the work, doing it well, while maintaining personal humility found in this study calls for a revision of the middle school model to include an eighth dimension. In addition to the seven dimensions of the middle school model cited earlier, this eighth dimension would reference teaching team dynamics. This revised normative model will provide the basis for future research of teaching teams and student outcomes. Further research may help explain why this study found did not find more aspects of internal team dynamics that correlate positively with student performance.

Team Characteristics and Practices

Most Indicators of a Distinct Team Identity Correlate Negatively with Student Performance and AYP Status

A variety of practices and activities that establish a distinct team identity negatively correlate with student performance in mathematics or AYP status for the school. Negative correlations were found for AYP status with team motto as a single factor, and with a team's total number of identifying attributes: apparel, logo, mission, motto, song, and awards or recognitions for students. Negative correlations were found for student performance in mathematic with team logo and with a team's total number of identifying attributes. (See attributes previously listed.) Interestingly, positive

correlations were found for writing performance with team bulletin board, mission, philosophy and with a team's total number of identifying attributes. These results are intriguing, somewhat contradictory and make interpretation complex and difficult.

How do these mixed results regarding team identification fit with the conceptual framework for teaching teams? The theoretical and empirical lenses of the conceptual framework of this study do not help to interpret these results. The theoretical lens is limited to the internal dynamics among colleagues on the teaching team and no prior empirical studies focus on the particular identifiers of team identity examined by this study. As previously cited, team teaching gives a sense of family in the anonymity of a large school. Both students and staff develop respect and support individual difference (Arhar, 1994).

In *Punished by Rewards,* Alfie Kohn (1999) purports that overt and public rewards for students are counterproductive. Intrinsic rewards are more effective in promoting achievement than extrinsic rewards that can have a negative impact on the recipients and their peer group. Kohn's work may predict the finding of this study that awards and recognitions for students by the teaching team correlates negatively with student performance.

The normative model of the conceptual framework has two dimensions that apply generally to the importance of team identity. These are school climate, and health and safety, but team identity appears ancillary without specific note or emphasis in the middle school model. This study's findings, resulting from methodology designed to examine specific attributes of teaching team identification, fall outside the purview of the

framework. Therefore, further interpretation of these results would require additional research focused specifically on team identity.

Two Teaching Team Elements of Planning for Instruction Correlate Negatively with Student Performance in Reading and Mathematics

Two elements of planning for instruction used by teaching teams correlate negatively with student performance.

1. The extent to which the team relies on teacher-designed assessments to plan instruction correlates negatively with student performance in reading and mathematics. This finding suggests that teacher-designed assessments may not be properly aligned with the grade level expectations for student performance measured by the NECAP tests. Teacher-designed assessments are likely to be broader in scope and creatively diverge from the Vermont Grade Level Expectations (GLEs) for student performance.
2. The extent to which the team relies on a combination of materials, specifically Vermont's Writing Portfolios, Mathematics Portfolios and Grade Level Expectations (GLEs) to plan instruction correlates negatively with student performance in mathematics. This finding suggests that the Vermont Department of Education and school administrators should undertake measures to insure that teachers understand the GLEs in order to plan instruction more effectively to meet these performance standards.

These two findings both support and contradict elements of the conceptual framework. The curriculum and assessment for learning dimension of the middle school model calls for curriculum grounded in standards, a mix of assessment methods, and

assessment and evaluation that promote learning. The differentiated instruction dimension points to varied teaching and learning approaches that prepare all students to achieve high standards. Full implementation of the middle school model following these guidelines would likely lead to a variety of teacher-designed assessments. Similarly, by this model exemplary teaching teams are expected to rely on the state GLEs to plan for instruction "grounded in the standards" (Erb, 2001, p. 3). What is disconcerting about these findings is that teams who are following NMSA's best practices are not getting the student outcomes predicted by the normative model.

Two explanations may account for this discrepancy between the predicted outcomes and the results found by this study. Either the teacher-made assessments are not effectively linked to the state GLEs, or the teachers' understandings of the state's GLEs are inadequate to support effective teacher-made assessments. On the one hand, teaching teams may understand the GLEs, but create teacher-made assessments that lack focus or reliability. On the other hand, members of the teaching team may not have the same understanding of the GLEs as intended by the Vermont Department of Education. For some teaching teams, both explanations may be valid and account for this study's finding. Unfortunately, no empirical studies published to date are specifically designed to examine the links between teachers' planning for instruction, student performance standards (GLEs), and the NCLB required standards based assessments (NECAPs).

Interestingly, Lencioni's development of team theory does provide some explanation. To function effectively the team must sustain a focus on a clear bottom line—goals that are measurable with clear performance objectives. All fifty states have established standards for student performance and provided standards based tests to

assess student progress. These steps taken by the states are consistent with Lencioni's team theory because the state's GLEs provide clear performance objectives. The theory also holds the teaching team accountable for a clear bottom line, namely that all their students achieve the GLEs. Nonetheless, teachers may not understand the GLEs, may not have translated these standards into measurable objectives in their daily practice, or may not effectively teach their students to meet these objectives. In any case, properly focused professional development could be provided statewide to address these gaps.

The Extent of Control Teaching Teams Have Over a Combination of Three Aspects of Instruction Correlates Negatively with a School's AYP Status

Schools with teaching teams that report having a high degree of control over the team rules for student behavior, instructional time, and curriculum integration correlated negatively with the school's AYP status. As independent factors, only the team's control of the rules shows a significant negative correlation with AYP status. These results may contradict the earlier finding that students empowered by the team to help establish rules do perform better than their less empowered peers. The extent to which a teaching team is autonomous may be key to resolving the apparent contradictory results related to establishing team rules. In applying the conceptual framework to resolve this contradiction, the normative and theoretical lenses provide little that has not been noted previously. One empirical study lends some helpful insight. Ingersoll (2001) found that teaching team satisfaction is related to team autonomy allowing teachers to influence decisions.

One possible explanation for this apparent contradiction is that a teaching team's rules may be different from the school's rules. This study did not examine the extent to

which team rules were consistent with school rules, nor the team or school procedures for enforcing rules. Autonomous teams are likely to establish rules that differ somewhat from other teams or grade levels in the school. When students help establish team rules, they are likely to be consistent with rules for their peers in the same school. Since the AYP status of a school is a based on the performance of all students in the school, teaching teams should not hesitate to collaborate with their students to establish rules of behavior that are consistent with the rules of their school.

Returning to the teaching team's extent of control over the combined three elements of instruction challenges the middle school model. The dimension of curriculum and assessment calls for "curriculum that is challenging, integrative, and exploratory" (Erb, 2001, p. 3). If teams report greater control over curriculum integration and instructional time, it follows that they would develop and implement curriculum that matches the model. Unfortunately, this is not necessarily the case. A team's autonomy may be just as likely to result in different plans for curriculum implementation and instruction. Do teaching teams with a high degree of control over rules, time, and curriculum pursue initiatives that do not align well with performance-based standards assessed by the NECAP?

Given teachers' hundreds of years of experience in non-standardized schooling, empirical studies provide no insights. Prior studies have not focused on possible links between teaching team autonomy and student performance, but team theory predicts that within an organization all teams must be focused on the same performance goals to be effective. Significant differences of approach to reach performance goals undermine the effectiveness of the organization (Lencioni, 2002). Team autonomy breeds variation.

This may be a positive influence on pedagogy, but not effective for all students' achieving the standards. The autonomy of teaching teams needs to be kept in balanced—restrained by a sustained and disciplined focus on student performance.

Spending More than Thirty Minutes per Week in Advisory Groups Correlates Negatively with a School's AYP Status

The data yield mixed results for advisory groups, a common element of teaching teams and middle schools. The results produced no finding regarding the question of whether having advisory groups is better for student performance than having none. However, when the amount of time devoted to advisory groups exceeds thirty minutes per week a school is less likely to achieve adequate yearly progress.

This finding challenges the middle school model's expectation that advisory groups are an essential element of a developmentally responsive education. *Turning Points 2000* calls for teaching teams and small advisory groups (Jackson & Davis, 2000). Advisory groups are recommended as an effective means to contribute to the model's dimensions of student counseling and support, school culture, health and safety, and community connections. According to the middle school model, the purpose and rationale for advisory groups is to support adolescents affectively and thereby improve student performance indirectly.

The empirical studies by Flowers and her colleagues at the CPRD included advisory groups as part of a fully implemented middle school. They found that "a teacher-led advisory program is another type of structure that middle grades schools implement to not only create a smaller, more personalized environment for students, but also to address developmental changes that are occurring in students' lives" (Mertens,

Flowers & Mulhall, 1999, p. 4). However, a study comparing the student performance of teaching teams with and without advisory groups was not found in the literature.

Without the benefit of empirical insight, a logical explanation for the finding that spending more than 30 minutes per week in advisory groups does not help a school achieve AYP status could be that the more time teaching teams spend in advisory groups, the less time teachers have for direct instruction. Some teaching teams reported devoting as much as 60 minutes per week to advisory groups. Less time for direct instruction could account for lower student performance. Lower student performance results in the school failing to make AYP. Note that AYP status is based on the NECAP performance of all the students in a school, not just those students on a single teaching team. However, it is likely that all teaching teams in a particular school will have the same amount of time scheduled for advisory groups. Though appealing in its simplicity, further empirical study would be necessary to verify this explanation of this study's finding regarding the amount of time students spend in advisory groups.

A more involved but equally plausible explanation for this finding stems from taking a look at a graphic representation of the data. The graph of the relationship between advisory group minutes per week and NECAP scores is an inverted U. The lower range of time devoted to advisory groups, increases in minutes per week are associated with improved student performance on the NECAP tests. However, after reaching the optimal level of 30 minutes per week, further increases in advisory time are associated with declines in student performance. Given the middle school model that primary purpose of advisory groups is to build positive student to student and student to adult relationships, this finding may be explained as having too much of a good thing.

Spending time in a small group developing positive relations may be productive in small amounts—30 minutes or less per week. Additional time in advisory groups may mean hanging out more with friends, not necessarily productive time, or as this study found, associated with lower student performance. While some may find this hypothesis acceptable, further study of advisory group characteristics and student performance is needed to provide adequate explanation for the results of this study.

Either explanation begs the more critical question not addressed by this study. What is actually done during advisory time? Without control over the content of advisory group time, no conclusions can be drawn regarding the effects of this time on student performance on standards-based exams.

Team Formation and Composition

In Vermont, Schools with Larger Team Enrollments Perform Better than Schools with Smaller Teams

Three measures of student enrollment correlated positively with AYP status, mathematics scores, and writing performance, respectively: (1) the proportion of teaching teams with 70 or more students whose schools achieved AYP was higher than that of teaching teams with fewer than 70 students, (2) school enrollment correlates positively with NECAP high-cut scores in mathematics, and (3) the number of students on the team correlates positively with the NECAP low-cut scores for writing. Although similar positive correlations were not consistently found across all indicators of size and measures of student performance, these three findings warrant further consideration and discussion.

How do these findings compare with the teaching team framework? The seven dimensions of the middle school model do not address school enrollment or team size. Team theory offers little bearing on this issue apart from assuming that larger teams have more complex networks of internal relationships and make it more difficult for members to stay focused as a team and hold each other accountable. This may be relevant when considering the number of teachers on the team, but has questionable value when applied to the number of students in school or teaching teams.

On the other hand, a number of empirical studies have compared various indicators of size and student outcomes. Teams of 120 or fewer students and student to teacher ratios of 25:1 or less were linked to positive student outcomes (Erb & Stevenson, 1999). Bishop and Stevenson also concluded that smaller teams are more effective. In a survey conducted for NMSA, they studied team enrollments and teaching team size comparing two teacher teams with 40–60 students and six teacher teams with 150–190 students (Bishop and Stevenson, 2000). Further reinforcement for the smaller is better concept comes from a large CPRD study comparing three sizes of middle school teams: less than 91, 91–120, and greater than 120 students. Flowers concluded that smaller teams more frequently engaged in student activities (Flowers et al., 2000). Arhar (1994) found that team teaching gives a sense of family in the anonymity of a large school.

When viewed in the context of these empirical studies and given the limits of the statistical range available in Vermont, this study's findings are not contradictory. School enrollments for this study ranged from 78–712. Even the largest schools in this study do not approach the anonymity of a large school considered by Arhar. More telling is the range of student enrollment per team from 5 to 81. This upper limit is well below the

effective size thresholds found by the studies of Bishop, Erb, Flowers, and Stevenson. Therefore, this study's findings that students in larger schools or on larger teams perform better than smaller ones is consistent with prior empirical studies. In Vermont, many smaller schools could consolidate without adversely affecting student performance on the NECAPs.

The Strategic Assignment of Teachers to Teams by Principals who Report Careful Consideration of Teacher Personalities and Temperaments Correlates Negatively with Student Performance

Many educators believe that teaching teams should be carefully put together with regard to age, gender and teaching experience. In addition, the personalities and temperaments of team members are considered relevant to teaching team assignments. The results of this study challenge this commonly held view. The data reveal that the degree to which the principal assigns teams by balancing teacher personalities or temperaments correlates negatively with student performance in mathematics. A negative relationship was also found between balancing teams and the school's AYP status. What may account for these results?

The middle school model and empirical studies offer no answers, but the lens of team theory may provide some explanation. Matusak's four stages of team development include forming and storming stages, followed by the norming and performing stages. Lencioni's work on effective team function underscores the importance of a storming phase of candid discussion including all members before reaching team consensus. This theory is consistent with the finding that a principal may do just as well by randomly assigning teachers to teams. Teachers who lobby principals for team assignments may be

seeking a collegial comfort zone of similar teaching philosophies and values. The principal may also be eager to avoid the collegial tension and fallout resulting from lengthy debates and disagreements among members of a team.

In studying group behavior, Richard Walton points to the importance of energy level and team function. Walton believes "the individual's maximum ability to integrate and to utilize information occurs at some *moderate stress level*" (Walton, 1987, p. 97). If the threat of interpersonal conflict is low, there is no sense of urgency and no reason to look for alternatives. Walton's theory argues for a productive level of difference among professionals on a teaching team. Although administratively convenient, a teaching team composed of like-minded professionals may not be the best to creatively meet the needs of diverse student personalities and learning styles.

The results of this study call to question how principals make teaching team assignments. Principals need to know what, if any, aspects of teacher personality and temperament are critical to forming effective teaching teams. Further research comparing the effectiveness of philosophically homogeneous or more diverse teaching teams is warranted.

A Special Educator on the Teaching Team Correlates Negatively with Student Performance in Mathematics and Writing

Two additional results of this study should cause some principals to reconsider the practice of assigning a special educator to teaching teams. Students on teams that include a licensed special education teacher do not perform as well as students on other teams in writing and mathematics. These results are predictable since teaching teams with special educators presumably have most if not all of the students with special needs assigned to

them for instruction. As a consequence a school with more than one teaching team may have one with a more homogeneous group of lower performing students.

This finding supports a basic tenant of the middle school model as outlined in *This We Believe* that heterogeneous grouping for instruction is more effective and developmentally appropriate for early adolescents (Erb, 2001). Heterogeneous grouping by performance and ability address the normative model's two dimensions of differentiated instruction and a school culture that holds high expectations for all. Still, a paradox exists between the model to mainstream students with special needs by creating entirely heterogeneous instructional groups and the need to provide adequate support for special needs students by assigning a special educator to their team. The assignment of a special educator to a team is intended to enable special needs students to succeed in the classes that are more homogeneously grouped than those of other more heterogeneously assigned teams without a special educator.

Although these results cannot establish a causal relationship, principals should consider assigning students with special needs heterogeneously among their peers and evenly across teaching teams. Alternatively, short-term homogeneous grouping by ability may be effective if truly short-term and properly focused on specific performance objectives. While many articles suggest ways to meet the instructional challenges of heterogeneity, a longitudinal study of individual student performances over their middle school years might shed further light on how the inclusion of special needs students assigned to relatively heterogeneous versus homogeneous teaching teams affects the achievement of all students on the high stakes tests required by NCLB.

Teaching Team Elements that Have Little Effect on Student Performance

Often research informs best practice not only by its findings, but by what was not found. This study examined a broad array of variables measuring the characteristics and practices of teaching teams. Although a number of significant correlations with student performance were found, most elements of teaching teams appear to have little or no effect. Five of these non-findings—instances in which expected correlations were not significant—are notable. The non-findings for these elements of teaching teams are noteworthy because they challenge the conceptual framework of this study:

1. Agendas for teacher team meetings,
2. Written records of teaching team decisions,
3. Relying on commercial standardized tests to plan instruction,
4. Looping students with the same teaching team for more than one year, and
5. Increasing the number of interdisciplinary thematic units taught per year.

How can the conceptual framework for teaching teams explain why these elements do not correlate significantly with student performance?

The team theory calls for collaborative decisions and accountability to achieve team goals. Written agendas for team meetings and recording team decisions are common means for teaching teams to hold each member accountable. While it is possible that some team decisions are not intended to improve student performance, this non-finding is disappointing. How can teaching teams hold themselves accountable without setting clear agendas and recording their decisions? If the principal provided oversight by reading the team agendas and meeting minutes, would the results be

different? The design of this study does not provide an answer to these important questions.

The conceptual framework of this study does not support further consideration or discussion of the next two elements: teaching teams rely on commercially available tests to plan instruction, and looping students with the same teacher for more than one year. These two non-findings are neither predicted nor explained by the framework.

Among this group of non-findings, only increasing the number of interdisciplinary thematic units taught per year, directly challenges the middle school model. Interdisciplinary thematic units for instruction pertain to the model's dimension of curriculum and assessment for learning. According to Erb (2001), developmentally responsive instruction requires curriculum that is integrative. Surprisingly, this study found no significant correlations for a teaching team's number of interdisciplinary units per year with NECAP measures of student performance. It is important to recognize the limitations of this study's sample of teaching teams. Most teams reported using interdisciplinary units for instruction and only the number of interdisciplinary units per year was surveyed by this study.

Numerous empirical studies have found positive affects linked to interdisciplinary instruction. Flowers and her colleagues examined the impact of interdisciplinary teacher teams in middle schools. They found that teaming improved student achievement (Flowers, et al, 1999). Earlier Arhar and Irvin found that less departmentalization is positively associated with student achievement (Arhar & Irvin, 1995). When comparing junior high schools with those converted to middle schools, Lee and Smith found that schools with team teaching were positively associated with higher student achievement

and engagement (Lee & Smith, 1993). These studies predict a positive correlation for the number of interdisciplinary units a teaching team uses per year with student achievement. Although the results of this study appear to challenge the results of these prior studies, the proportion of the curriculum that is thematic may be the question, not the number of interdisciplinary units taught. Increasing the number of thematic units may be associated with having a lot of possibly disconnected sub-units rather than a few more substantial and overarching units addressing many GLEs.

Team theory supports interdisciplinary approaches to solving problems. Each member is included in the process of deliberation and planning a course of action to reach specific goals. Each team member contributes individual expertise to these team efforts. This non-finding for a predicted link between interdisciplinary instruction and student performance may point to inadequate planning and/or ineffective implementation of these instructional units. Lencioni's team theory requires that members agree to achieve clear and measurable objectives. Perhaps the interdisciplinary units designed and implemented by teaching teams are not clearly focused or directly linked to the state's grade level expectations and standards for student performance.

Emerging Themes

In the process of applying the teaching team conceptual framework to explain the results, three themes emerged that give the findings greater meaning. These three emergent themes are: (1) build relationships on knowledge, trust, collaboration and accountability, (2) teaching teams can get too independent, and (3) how teaching teams are formed affects student performance.

Build Relationships on Knowledge, Trust, Collaboration and Accountability

This study found that specific aspects of the relations between the teachers and parents, the teachers and students, and the teachers and their colleagues on the teaching team affect student performance. The level and quality of communications are key to establish empowered relationships that build trust and promote accountability. To effectively support student performance, all of these relationships must be based on high degrees of knowledge, trust and collaboration.

Teacher parent relations. Teaching teams that use electronic means, such as email or the web for communications, enable parents to keep in touch with their children's studies at school and at home. Although not all parents have access to the web or may not be fluent in English, parents who are able, can learn what is going on in the team's classrooms and why. This knowledge is a powerful ally in holding students responsible for their work. It also establishes trust between parents and staff. Volunteering in the school is another indicator of parent-teacher trust. Having volunteers in school requires collaboration. Parents who volunteer are comfortable assisting the teachers and the teachers are confident that the parents will be genuinely helpful.

Teacher student relations. This study found that when students influence classroom instruction, select their learning modes, help make rules, and assist in planning for celebrations, they perform better academically. All of these elements point to teacher student relationships that have students who are empowered and engaged. In this empowered relationship teachers collaborate with their students on significant issues

to create and sustain a dynamic and effective learning environment. Knowing each other, trust, collaboration and accountability are the essential characteristics of this empowered relationship.

Teacher collegial relations. Colleagues on a teaching team who develop positive professional relations will benefit the team and their students. Three teaching team keys to student performance are: (1) we hold back from seeking credit for our own contributions, (2) we hold each other accountable for contributing equally, and (3) we hold each other accountable for the quality of our work. These attributes of internal team relations could equally apply to peer relations among students. In either case, these relationships require high levels of knowledge, trust, collaboration and accountability.

Teaching Teams Can Get Too Independent

Five findings concerning the activities and demographic elements of teaching teams correlate negatively with student performance. Collectively these negative findings raise the question—Do teaching teams exercise too much professional discretion and independence to be effective in meeting the student performance goals of the state? Some elements of teaching teams may not help students meet the performance standards mandated by NCLB.

Team identification. Among these, team identification activities including team apparel, logo, mission, motto, and awards for students are counterproductive. These unifying activities may have other positive effects, such as boosting team morale. However, are they worth the investment of time and energy they require? Each school must decide. These activities may also result inadvertently in undermining school-wide

initiatives to improve student performance. The school's identity, teamwork and morale may also suffer.

Teacher-designed assessments. This study also found that students did not perform as well for teaching teams who reported relying on teacher-designed assessments to plan for instruction. Teacher-designed assessments can be viewed as an indicator of professional independence. This independent work may be individual or collaborative with other team members. The degree to which teacher-designed assessments may vary from the state's grade level expectations for student performance may be the root cause of this negative finding.

Team control over instruction. The results show teaching teams that indicate a high degree of control over a combination of instructional responsibilities correlated negatively with a school's AYP status. These instructional responsibilities include team rules, instructional time and curriculum integration. These areas of responsibility connect the teaching team to the rest of the school to form an integral whole. Teaching teams may think they are doing the right thing, but when the independence of the teaching team results in decisions that are not coordinated with the school, their decisions may unintentionally undermine school-wide initiatives to improve student performance.

These results indicate that some teaching teams' independent initiatives may need to be reconsidered and balanced against the broader needs of the school. Considering these negative results will enable principals and teaching teams to collaborate and focus their limited resources of time and initiative more effectively.

How Teaching Teams are Formed Affects Student Performance

Both the formation and the composition of teaching teams make a difference in student performance. The results of this study give some direction to administrators as they make teacher and student assignments to teaching teams.

Assigning teachers to teams. Teaching teams assigned by principals who balance teacher personalities or temperaments do not perform better than teams in other schools. Principals should consider assigning teachers to teams randomly or use more objective performance measures to inform their decisions.

Teaching teams that included a licensed special educator on the team was negatively associated with student performance. It is likely that the assignment of a special educator to the team results in a greater number of students with special needs on that team. While this reality—more special education students results in lower student performance scores—explains this result of the study, the practice of assigning a special educator to a team should be based on improving the achievement scores of the individual students.

Assigning students to teams. Assigning all the students with special needs to the team with a licensed special educator is logical, but it raises the question of homogeneous vs. heterogeneous grouping for instruction. Teams with more capable students are more likely to perform better than those having more students with special needs. This finding does not answer the question of the merits of inclusive and heterogeneous assignment of students with special needs across all teaching teams. The key indicator to determine student assignment to teams or short-term groups for

instruction is the individual growth in achievement scores for all students including those with special needs. This individual student data was not part of this study.

Both Team and School Enrollments Correlated Positively with Student Performance Within the Limited Range of the Sample

Schools with teams having 70–115 students were more likely to meet AYP. Given the sample's range of 78–712, students in schools with larger enrollments performed better in mathematics than those in smaller schools. Vermont administrators should consider forming larger instructional units.

As reviewed in this section, three themes emerged from the study's findings: (1) build relationships on knowledge, trust, collaboration and accountability, (2) teaching teams can get too independent, and (3) how teaching teams are formed affects student performance. These themes give greater meaning to the results and will be revisited in Chapter 6, Implications.

Reforming the Conceptual Framework

The findings and emerging themes of this study are not completely explained by the Teaching Team Conceptual Framework described in Chapter 2. This conceptual framework included three lenses—normative, empirical, and theoretical—for viewing and explaining the findings. The Teaching Team Conceptual Framework served well to explain and interpret most of the results with a few provocative exceptions.

The unexplained results in the study are noteworthy because exceptions to the framework may reveal conceptual gaps and lead to its revision. Results that challenge the teaching team framework must either be rejected due to flawed methodology, or

accepted as pointers for possible revision of the framework. Though not immune from criticism, the methodology that produced these exceptional results is sound enough to warrant their consideration as valuable indicators that suggest revising the framework. The teaching team framework of this study should be reformed in its normative and theoretical lenses.

Improving the Normative Lens by Revising the Middle School Model

The middle school model developed for this study combined elements of model middle level education articulated in *Turning Points* and *This We Believe.* This synthesis of the two was described in seven dimensions. These Seven Dimensions of the Middle School Model included; 1) Curriculum and Assessment, 2) Differentiated Instruction, 3) Student Counseling and Support, 4) School Culture, 5) Philosophical Commitment to Adolescents, 6) Health and Safety, and 7) Community Connections. The study's findings that were insufficiently explained call for revising three of the seven dimensions and adding an additional eighth dimension to improve the explanatory power of the model. Curriculum and Assessment, School Culture, and Community Connections warrant revisions.

The Curriculum and Assessment Dimension of the Middle School Model

The study found that relying on the state standard grade level expectations (GLEs) to plan for instruction correlated negatively with student performance. This surprising finding is not explained by the framework and requires further study. It does call attention to the important roles of standard-based curricula and assessment play in NCLB

holding schools accountable for student performance. The middle school models in *Turning Points* and *This We Believe* preceded the standards-based movement in education. The results of this study suggest that the model be updated to include specific reference to student performance standards. The first revision involves curriculum—Teaching teams implement a standards-based curriculum that is challenging, integrative, and exploratory.

The second revision clarifies the assessment half of this dimension of the middle school model. The study found teaching teams that rely on teacher-designed assessments to plan instruction correlated negatively with student performance reading and mathematics. This suggests that such assessments are not adequately aligned with the state standards or do not provide direction to plan for effective instruction. In either case, the purpose of assessment should not be limited to what the student has learned, but also inform the teacher how to fill the gaps in learning and how to teach what's next. As Stiggins (2004) would say, assessment is for learning, not of learning. The tendency for the public is to focus on the results of annual standards-based assessments of learning mandated by NCLB. This focus on summative rather than formative assessment makes this one word revision of the model an important clarification. In defining the Curriculum and Assessment dimension of the middle school model, use a mix of assessments for learning. Assessment is for learning, to measure student achievement, to inform instruction, and to support continuous progress.

The Differentiated Instruction Dimension of the Middle School Model

Based on the findings that when a team's students select learning modes for instruction, and influence their instruction, they perform better in reading and mathematics, this dimension should be revised. Planning for differentiated instruction should provide students the opportunity to discover how they learn best and influence team decisions about their instruction. This adds a collaborative nuance to the teacher student relationship when planning for instruction that should result in effective differentiated instruction, not just different instruction.

The School Culture Dimension of the Middle School Model

The second revision of the model expands the school culture dimension of the model middle school. The description of school culture should be revised to empower students in shaping their learning environment. This change is based on the finding—teaching teams that give students greater roles in decision-making correlate positively with student performance in reading and mathematics.

Thomas Erb describes the *Turning Points* model middle school as one "govern(ed) democratically, including all school staff members" (Erb, 2001, p. 3). Based on the results of this study, the model middle school should be governed democratically including all school staff members and students. The inclusion of students in this descriptor does not compromise or undermine the other six dimensions of the middle school model. This revision will improve student performance by giving sanction and support to teaching teams that empower their students to influence their learning environment.

The Community Connections Dimension of the Middle School Model

This study found two teaching team communication practices with parents associate with higher student performance in reading and mathematics. The first of these—the team makes announcements via email or website—warrants updating the community connections dimension of the model. The sources of the middle school model could not anticipate the impact of electronic communications on adolescents and their families, but teaching teams and their schools should take advantage of contemporary technology to develop positive relations with the communities they serve. In the information age, communications is the key to building effective public and professional relationships based on knowledge, collaboration, trust and accountability. The community connections dimension should be revised to include using email and the worldwide web to communicate effectively with students and parents.

Teaching Teams as the Eighth Dimension of the Middle School Model

Adding an eighth dimension to the middle school model is suggested by the three findings regarding teaching team autonomy and identity: (1) most indicators of a distinct team identity correlate negatively with student performance and AYP status, (2) two teaching team elements of planning for instruction correlate negatively with student performance in reading and mathematics, and (3) the extent of control teaching teams have over a combination of three aspects of instruction correlates negatively with a school's AYP status. Considered jointly, these results point to a flaw in the middle school model that assumes that teaching teams with greater independence and autonomy will be more effective in meeting the developmental and academic needs of their

students. The results of this study question this assumption and call for revising the model to mitigate the possible negative effects of teaching team autonomy that is unrestrained and unaccountable.

Specific mention of the crucial role teaching teams play in the full implementation of the present middle school model is conspicuously absent. In the curriculum and assessment dimension of the model, the requirement that curriculum be integrative implies a need for interdisciplinary teams, but no additional reference is made. Perhaps this omission was strategic and politically motivated. Initially the middle school movement met with many obstacles. One major objection was the cost of providing adequate planning time for interdisciplinary teams of teachers to plan and coordinate instruction. The model focused more on the developmentally appropriate goals of middle schools than on teaching teams as a means to successful implementation.

As the vast majority of middle schools now have teaching teams with team planning time, revising the middle school model in response to these findings is appropriate. The curriculum and assessment dimension of the middle school model should be revised to recognize the role of teaching teams. Teaching teams teach a curriculum grounded in standards, relevant to adolescents' concerns, and based on how students learn best. Adding an eighth teaching teams dimensions to the model will help explain how effective middle schools work.

This teaching team dimension highlights important characteristics of teams that are associated with higher student performance. Highly effective teaching teams not only focus on teaching, but also teaming. The study found three aspects of the internal dynamics of a teaching team correlate positively with student performance. As discussed

previously, these describe positive professional relations that hold members accountable. In addition, a number of findings indicated that a teaching team's autonomy and focus on identity may be counterproductive in meeting the school's adequate yearly progress (AYP). The middle school model must balance the autonomy of teaching teams day-to-day with the cumulative performance of the school's student body over time. The teaching teams must have a shared vision connected coherently and consistently with that of the whole school.

In its early editions of *This We Believe,* the National Middle School Association (NMSA) did not emphasize the importance of teaching teams. "Middle level schools can offer courses and units, taught either by individual teachers or by teams, that are designed specifically to integrate the formal school curriculum" (Erb, 1995, p. 22). In its latest position paper—*This We Believe: Successful Schools for Young Adolescents*—teaching teams are viewed as essential. "The interdisciplinary team of two to four teachers working with a common group of students is the signature component of high-performing schools, literally the heart of the school from which other desirable programs and experiences evolve" (NMSA, 2003). Adding an eighth dimension for teaching teams to the normative model recognizes this development and draws attention to the important effects internal dynamics of the team have on student learning. It also recognizes the independence of the teaching teams while holding them accountable to support the mission and goals of the school.

As reformed by the findings of this study, the middle school model has eight dimensions as shown in Table 17.

Table 17. Reformed Middle School Model with Eight Dimensions

Eight Dimensions	Description
1. Curriculum and Assessment	Teach a curriculum grounded in standards, relevant to adolescents' concerns, and based on how students learn best. Use a mix of assessment for learning. Implement a standards-based curriculum that is challenging, integrative, and exploratory.
2. Differentiated Instruction	Students influence instruction and select learning modes for instruction. Use varied teaching and learning approaches.
3. Student Counseling and Support	Organize relationships for learning. Use flexible organizational structures. Have an adult advocate for every student. Provide comprehensive guidance and support services. (Unchanged from the Seven Dimension Model)
4. School Culture	Schools should be governed democratically, involving all school staff members and students. Teachers engage students in jointly planning for celebrations. School has a shared vision, high expectations for all, and a positive school climate.
5. Philosophical Commitment to Adolescents	Educators committed to young adolescents. Staff middle grades schools with teachers who are expert at teaching young adolescents and engage teachers in ongoing professional development. (Unchanged from the Seven Dimension Model)
6. Health and Safety	Provide a safe and healthy school environment. Programs and policies that foster health, wellness and safety. (Unchanged from the Seven Dimension Model)
7. Community Connections	Teaching teams communicate effectively with students and their families using email and the worldwide web. Build family and community partnerships. Involve parents and communities in supporting student learning and healthy development.
8. Teaching Teams	Develop positive internal team dynamics. Have a shared vision connected coherently and consistently with that of the whole school. Balance the day-to-day autonomy of teaching teams with the cumulative performance of the school's student body over time.

Note. Descriptions include material from *This We Believe and Now We Must Act* (p. 3), by T. O. Erb (Ed.), 2001, Westerville, OH: National Middle School Association.

Expanding Team Theory to Include the Effects of Intrinsic versus Extrinsic Rewards

One finding suggests that the theoretical lens of the study's teaching team framework needs to be expanded. As previously discussed, this study found that most indicators of a distinct team identity correlate negatively with student performance and the school's AYP status. Among these indicators of team identity, team awards or recognitions for students stands out as the most controversial for educators and parents. While the basis for this finding may be considered narrow, the questions it raises are both troubling and invaluable. How do awards and recognitions affect student performance? More specifically, what effects do extrinsic rewards have on their recipients and non-recipient peers and how do these compare with the effects of intrinsic rewards? Finally, what are the effects of both extrinsic and intrinsic rewards on team dynamics from both the individual and group perspectives?

The framework's theoretical lens of team dynamics provides no answers to these questions. In the United States, most parents and educators accept the importance of student awards and recognitions as a natural part of America's cultural identity and economic system, but do extrinsic rewards help schools achieve the NCLB goal of all students meeting high academic standards?

Expanding the theoretical lens of this study's framework to include the work of Alfie Kohn will help answer these questions. Kohn's ideas should be applied to the work of Matusak, Lencioni, Bales and Walton in the field of team theory. This revision of the conceptual theory of team dynamics would provide an explanation of the effects of intrinsic and extrinsic rewards on team function. The theoretical lens of this study could

then explain these results and tell how teaching teams can best use extrinsic and intrinsic rewards to improve student performance.

Summary

This chapter has viewed the results through the normative, empirical and theoretical lenses of the study's conceptual framework for teaching teams. From this analysis, the findings fell into three groups and revealed three emerging themes—(1) build relationships on knowledge, trust, collaboration and accountability, (2) teaching teams can get too independent, and (3) how teaching teams are formed affects student performance. These themes will be developed in the next chapter and will bring the study's wide-ranging results together for interpretation as a whole, greater than its parts.

In addition to revealing emerging themes, the search for clear explanations for each result revealed some conceptual gaps in the middle school model and team theory lenses used by the framework. Certain correlations found, but not predicted by the teaching team framework, were discussed and gave reason to reform the framework. Revisions to improve the teaching team framework's explanatory power were proposed. These included revising three of the Seven Dimensions of the Middle School Model and adding an eighth dimension—Teaching Teams. Kohn's work on the effects of intrinsic and extrinsic rewards would strengthen the theoretical lens of this study's conceptual framework. With these revisions, the reformed conceptual framework for teaching teams should prove to be a valuable resource for future research on middle level education.

In the next chapter, the implications of the three themes emerging from the findings will be developed to provide greater meaning. The study concludes with recommendations for future practice, policy, and research.

CHAPTER 6

IMPLICATIONS

"Too often we enjoy the comfort of opinion without the discomfort of thought."

– John F. Kennedy

This Study

This study investigated the attributes and practices of teaching teams that are associated with student achievement in Vermont's middle schools. A review of the extant literature on middle schools—both conceptual and empirical—provided a functional definition of teaching teams. Today's middle schools evolved as a result of an evolutionary sequence of reforms from the 19th century's classical high school through Dewey and the modern junior high school. These reforms, fueled by economic and societal changes, continue today as practitioners meet the challenge of the truly universal and inclusive education mandated by NCLB.

The model for the contemporary middle school derives from two works—*Turning Points 2000* and *This We Believe*. The common elements of the two models combine to define the seven dimensions of the conceptual framework developed for this study. This normative model is based on empirical research beginning in the late 20th century. Educational visionaries and researchers have provided direction and rationale for many educational reforms at the middle level including interdisciplinary instruction and team teaching. Following a review of prior middle school studies the researcher defined a teaching team as two or more teachers providing instruction for the same group of students in any number of curricular disciplines including both mathematics and language arts. To further describe and compare teaching teams, 52 elements were identified and

examined (*Teaching Team Survey*, Appendix D). These elements included team demographics, relationships and practices.

The study included 44 teaching teams in 30 schools providing a representative cross section of middle level education in Vermont. Participating teams, their principals and the Vermont Department of Education provided descriptive evidence regarding all aspects of the 52 elements in the *Team Teaching Survey*. All participants were guaranteed anonymity and responses were recorded as 150 descriptive fields in the study's quantitative database (Appendix B). Prior to analysis of the data, performance scores for student achievement on the NECAP tests were adjusted to control for student income using the percentage of households earning $75,000 or more in the school district.

During the analysis phases, the complex multi-dimensional interplay of the 52 elements of teaching teams examined by this study became apparent. It became clear that simple or straightforward conclusions to support or reject the middle school teaching team model were not likely to be found. At first, this prospect was disheartening. That is, in today's era of high stakes accountability where teaching is to be rooted in best practices and scientifically based practices, a simple answer to the question—Are teaching teams working in middle schools?—was not explicitly apparent.

However, when the findings of this study were interpreted using the multiple dimensions of the conceptual framework, a number of significant understandings were generated. The interpretation of the findings detailed in the previous chapter called for a revision of the theoretical and normative lenses of the conceptual framework. Team theory previously cited by this study does not account for the finding that most activities

related to team identity do not correlate with student performance. In addition, team theory does not explain why student recognitions and awards do not improve student performance. Similarly the normative lens of this framework—a middle school model combing elements defined in *Turning Points* and *This We Believe*—does not explain the importance of internal team dynamics found by this study. The model's seven dimensions focusing on developmentally appropriate curriculum and instruction say nothing directly about teaching teams and how collegial relations among teachers affect student performance. These gaps in the theoretical and normative lenses of the conceptual framework are addressed in the Implications for Theory and Recommendations for Practice sections that follow. These revisions were the result of framing the study's findings in a more powerful explanatory framework. This more functionally inclusive framework generated new knowledge about middle school teaching teams.

While the analytical process was complex (relying on a database including 173 quantitative indicators), in the end the conclusions of this study can be summarized very simply: To become more effective, teaching teams must transform themselves into learning teams. The transformation of teaching teams to learning teams will require changes in theoretical and conceptual thinking. This chapter highlights implications and recommendations for practice, policy and research.

Implications for Theory

When viewed from the study's conceptual framework, the results revealed the explanatory power of the teaching team framework. The three lenses of this conceptual

framework—the normative, empirical and theoretical fit well together to provide sound explanations for nearly all the results found. However, as originally conceived, the teaching teams framework developed for this study proved inadequate to explain all the findings. As discussed in Chapter 5, revising the normative and theoretical lenses used will address these gaps in the framework. The reformed lenses of the conceptual framework will provide more complete explanations of the findings.

For example, giving students greater roles in decision-making correlates positively with student performance in reading and mathematics is a finding that is consistent with three dimensions of the conceptual framework's normative model—curriculum and assessment for learning, differentiated instruction, and school culture. The finding that students perform better when given the opportunity to participate in making decisions about what and how they will learn is supported by prior empirical studies. Most closely related is one involving Vermont students and teaching teams conducted by Bishop and Boyer. They concluded, "When teachers invite student collaboration in setting goals, designing curricula, and governing their team, many students perceive positive personal changes and growth" (Bishop & Boyer, 2004, p. 16). The work of Matusak (1997) and Lencioni (2002), important elements of the theoretical basis of the teaching team framework, explains why team decisions must be reached collaboratively. Both call for hearing the opinions and points of view of every member of the team, before seeking consensus for action. By combining the perspectives gained from the three lenses of the conceptual framework, the finding that students should have greater roles in decision-making regarding their instruction, team rules and celebrations is not only rational, but in retrospect could have been anticipated.

Several findings are inadequately explained by the study's teaching team framework and point to conceptual gaps in the normative and theoretical lenses of the framework. Among these is the finding that holding back from seeking credit for their contributions to the team's success correlates positively with student performance. When considering teaching teams, Lencioni's five characteristics of effective teams should be revised. In addition to Lencioni's first team characteristic—trusting each other, strategic relationship building among team members that is based on calling attention to the accomplishments of the team rather than taking individual credit should be included. This revision of the theoretical lens of this study's conceptual framework is necessary to explain the role of strategic relationship building based on individual members holding back from seeking credit for their contributions, while quickly pointing out the contributions of their teammates, in the internal dynamics of effective teaching teams.

The finding for holding back from seeking credit for one's own contributions to achieving team goals is one of three characteristics of internal team dynamics that correlate positively with student performance. The other two are holding each other accountable for contributing equitably, and holding each other accountable for the quality of our work. Taken together, these three characteristics of effective teaching teams point to a gap in the middle school model used as the normative lens of the teaching team conceptual framework. The middle school model's school culture dimension, calls for "a shared vision" and "high expectations for all" (Erb, 2001, p. 3). Erb's call for high expectations for all applies to students and teachers alike and is consistent with the study's two findings that the degree of accountability among team members affects student performance. Accountability among colleagues requires a shared vision and

goals for the teaching team. However, no reference to the characteristics of internal team dynamics appears in the middle school models. The importance of internal team dynamics, specifically, accountability for sharing the work, doing it well, while holding back from seeking credit for individual contributions found in this study calls for a revision of the middle school model to include an eighth dimension. In addition to the seven dimensions of the middle school model cited earlier, this eighth dimension would reference teaching team dynamics.

The theoretical lens of the teaching team framework should be reformed to reflect the relationship between teamwork and motivation in the context of the public school. The positive effect of rewarding achievement to improve student progress predicted by team theory was not supported by the results of this study. The extent of use of awards or recognitions of students correlated negatively with student performance. This finding draws attention to Alfie Kohn's work which should be included as part of the theoretical lens of the teaching team framework. Kohn opposes the use of extrinsic rewards for motivating students to learn (Kohn, 1999).

When considering the use of extrinsic versus intrinsic rewards, teachers have reason to question the assessments that usually provide the basis for recognizing student or teacher performance. According to Rick Stiggins (2004), "The mistake we have made at all levels is to believe that once-a-year standardized assessments alone can provide sufficient information and motivation to increase student learning" (p. 22). This has "forced educators to approach standardized testing far more as a matter of compliance with political demands for test scores than as a matter of pedagogy" (Stiggins, 2004, p. 23). In *Test Better, Teach Better,* James Popham (2003) agrees, "policymakers, and most

citizens as well, believe that student performance should be the ultimate yardstick by which we measure a school's effectiveness…High test scores signify good schooling and low test scores signify bad schooling" (p. v). He advocates instructionally focused testing that informs teachers' instructional decisions. He finds four types of teaching decisions that teachers should be able to make based on "the way students perform on educational tests"—decisions about: 1) the nature and purpose of the curriculum, 2) students' prior knowledge, 3) how long to teach something, and 3) the effectiveness of instruction (Popham, 2003, pp. 5-6).

The work of Stiggins and Popham could strengthen this study's theoretical lens of the teaching team framework to help explain the finding that planning for instruction by relying on Vermont's Grade Level Expectations (GLEs) correlated negatively with student performance on the NECAP tests. Where does the theory that planning for instruction using data about student performance on state standards-based tests break down? Both Stiggins and Popham would point to the summative nature of the once-a-year NECAP assessments as part of the problem because they provide insufficient information and motivation to increase student learning. To make more effective instructional decisions, Popham (2003) advises teachers that "diverse assessment tactics will not only help you better understand what each content standard is really seeking, but will also provide you with instructional cues about how best to get your students to master each content standard" (p. 26). He argues that the logical strategy of administering standards-based tests annually to spur teachers to "promote students' content-standard mastery" has failed because teachers receive insufficient information from the tests (p. 30). The results of this study raise important questions regarding how

insufficient information or misdirected motivation are related to student performance on state-wide exams. The degree of motivational effect provided by the NECAP test scores is probably higher for the teaching team than the individual student. Stiggins (2004) points to the "mistaken belief 1. High-stakes standardized tests are good for all students because they motivate them to learn" (p. 23). These questions reveal a limitation of this study. It was not designed to examine the motivational effects of high stakes standards-based testing or other extrinsic recognitions received by students for high achievement.

Another intriguing finding inadequately explained by the study's conceptual framework is that teaching teams relying on teacher-designed assessments associated negatively with student performance on the NECAPs. Adding Popham's work to the theoretical lens of the framework would provide a plausible explanation. According to Popham, "Most state accountability tests fail to produce the kinds of data that will improve teaching and learning. Teachers can get the data they need from classroom assessments—if they know now to design instructionally useful tests" (Popham, 2003, p. 48). Teachers need formative assessments strategically designed to inform planning for standards-based instruction.

This study recommends that team theory as related to teaching teams in middle schools be broadened. Team theory will continue to provide strong core values for group functioning, but accountability, rewards, and the relationship between teacher and learner require further theoretical explication and rationale to guide practitioners, policy-makers, and researchers in this field. The primary theme that emerged from the results of this study—Build relationships on knowledge, trust, collaboration and accountability—requires this broadening of the theoretical foundation for teaching teams.

This study found that using the state standards and NECAP results to plan for instruction did not correlate with higher student performance. In addition to the question of insufficiently informative annual test results, teachers may be focusing more care and attention on planning for instruction rather than student learning. This is a logical response to high stakes standards-based testing because teachers can control what they teach and how they teach, but in doing so their focus may be too narrow. Improving student performance requires effective teaching that is informed by teachers learning how their individual students learn best. To be successful teachers and students both need to know what students have learned and how they can best demonstrate their learning. Teaching should include attending to the state standards and should be shaped by the previous year's NECAP results. Throughout the year, effective teaching must include formative assessment and strategically responsive instruction that must constantly be adjusted to effect student learning. In this way, teaching teams broaden the focus of their practice to include learning from their students, as described by Schön's reflective practice and Cohen's adventurous teaching. Effective teaching teams balance standards-based teaching with reflective practice and adventurous teaching.

Educators must understand the theoretical dimensions of learning that connect the teacher and learner in a reciprocal relationship of teaching and learning. The formal teaching theory of action is intentional and has direction. It points to the learner. Without the learner, teaching has no object and becomes a useless exercise. Perhaps this is explains why teachers often feel like they are wasting their time. Learning is an essential element of life. Learning without teaching as an antecedent can occur as the result of one's interaction with the physical environment, but natural learning no longer

assures well-being or success in our increasingly technological and global society. The global economy will continue to expand creating entirely new fields of work that demand both creativity and technical expertise. This dynamic economic environment will also demand constant learning for adults, placing a greater importance on lifelong learning. The resulting desire for learning will give new meaning and direction to teaching and teachers will continue to make a difference for every child and adult.

Few would argue against the proposition that teachers make a difference, but what can teaching teams in middle schools do to enhance their ability to make this difference? This call for collective self-efficacy is answered by the conceptual work of Richard DuFour and Rick Stiggins. The results of this study lend empirical support for empowering the student as learner. According to DuFour who recaps Stiggins work, effective teachers:

1. Inform students of the learning goals.
2. Build student confidence in themselves as learners to help them take responsibility for their own learning, so as to lay a foundation for lifelong learning.
3. Continuously adjust instruction to respond when students experience difficulty.
4. Engage students in regular self-assessment with standards held constant so students can watch themselves grow over time and thus feel in charge of their own success.
5. Actively involve students in communicating with their teachers and their families about their achievement status and improvement. (DuFour, 2004, pp. 183-4)

These activities describe an empowered student–teacher relationship that results in significant learning for both the student and teacher. It parallels the finding of this study that teams with students empowered to influence their learning environment achieve higher levels of performance.

Just as teaching points to the learner, learning has a direction as well. Learning leads to teaching. Anyone who claims to have learned something is naturally inclined to pass it on, to teach it to others. The agent of teaching is the teacher. The agent of learning is the student. As one points to the other, the student can become the teacher and the teacher can learn from the student. With this perspective in mind, teaching teams are also learning teams, dynamically changing roles from teacher to learner in a collaborative relationship with their students. The success of one depends on the success of the other. As David Cohen succinctly describes the teacher–student relationship, teachers "must accept their charges much more fully as co-instructors. They must find ways to help students expand their intellectual authority—which implies some reduction or transformation in their authority" (Cohen, 1988, p. 38). More pointedly, "The humans they improve include themselves," (p. 27). The revised framework for viewing the work of teaching teams as learning teams sees teachers collaborating with their students and colleagues to improve student performance.

Further theoretical support for transforming teaching teams into learning teams is provided by Donald Schön as he describes the reflective practitioner. Schön's theoretical analysis focused on the work of all service professionals, including teachers. According to Schön (1983), "The reflective practitioner's relationship with his client takes the form of a literally reflective conversation" (p. 295). "When a practitioner becomes a researcher into his own practice, he engages in a continuing process of self-education" (p. 299). Reflective practitioners seek out connections to the client's thoughts and feelings. As Schön advocates, teachers should not "be afraid to admit ignorance, ask for help in understanding, and expect to get it" (Schön, 1983, p. 301). This describes the

collaborative relationship between teaching colleagues and students found by this study to correlate with student performance. Teachers should be encouraged to reflect-in-action. Teaching teams require time to provide for the reflective practice necessary to become learning teams. Team planning time provides this professional opportunity. Reflective practice requires partnerships based on modes of collaboration with colleagues, students and parents. On learning teams teachers would support one another in reflective research.

To be effective teachers and teaching teams must be constantly observing and reflecting on their students' learning. With a broader theoretical perspective of teaching, educators will continue to learn from their students. Informed and stimulated by their collaborative reflective practice, teaching teams can develop their expertise to see that each child achieves the standards and no child is left behind.

In the previous chapter, analysis of the results suggested reforming the normative lens of the teaching team framework. As reformed by the findings of this study, the revised middle school model has added an eighth dimension—teaching teams—and four of the original seven have been improved. See Table 17 in the previous chapter. The eight dimensions of this reformed middle school model provide the basis for the recommendations in the following section—Recommendations for Practice.

Analysis of the results also suggests expanding the theoretical lens of the conceptual framework to inform the use of extrinsic and intrinsic rewards based on high-stakes testing in middle schools. The negative effects of individual rewards and recognitions on student performance found by this study are explored by the work of Alfie Kohn. At the teaching colleague level, Kohn's ideas should be connected to the

work of Matusak, Lencioni, Bales and Walton in the field of team theory to predict the effects of incentives and rewards on teaching teams. DuFour, Popham and Stiggins provide argument and reason for the effective use of assessment to motivate and inform instructional decisions. In addition to Kohn, the work of these three educational scholars should be added to the theoretical lens of the teaching team framework developed for this study.

Making these improvements in the normative and theoretical lenses of the conceptual framework for the study of teaching teams and student performance in middle schools will increase its explanatory and predictive power. Having examined the results of this study at the microscopic level using the conceptual framework for teaching teams and taking into account the conceptual revisions suggested by the analysis of the findings, the following sections make recommendations for practice and policy by stepping back to take advantage of a broader perspective.

Recommendations for Practice

The following five recommendations for practitioners are the big picture lessons learned from this study. The first three recommendations in this section support the first of the three themes that emerged from the study's findings—Build relationships on knowledge, trust, collaboration and accountability. Recommendation four addresses the second theme—Teaching teams can get too independent, and recommendation five concerns the third theme—How teaching teams are formed affects student performance.

Attend to the Internal Dynamics of the Teaching Team

This study found that the group dynamics on a team make a difference in student performance, and the results of this study give practitioners specific direction to focus their efforts. Three aspects of the internal dynamics of a teaching team correlate positively with student performance: (1) We hold each other accountable for contributing equitably, (2) We hold each other accountable for the quality of our work, and (3) We hold back from seeking credit for our own contributions, but are quick to point out those of our teammates. Teachers develop mutual trust and confidence in each other when they hold each other equitably accountable as members of an instructional team. Attention to strategic relationship building by holding back from seeking credit is another key to building effective teaching teams. Focusing more attention to developing these three attributes of internal team dynamics—equity, accountability, and strategic relationship building—will benefit the teaching team and improve student performance.

In following this recommendation, when teaching teams meet to plan for instruction or other team activities, each individual takes responsibility for an equitable share of the work. Teachers hold each other accountable to follow through and hold back from seeking credit individually. Colleagues on the team collaborate with high levels of trust and confidence. To assess their strengths and weaknesses as a team, teachers may use the internal dynamics survey, *How We Function as a Team* (See Appendix C). Teams should pay particular attention to their responses to three survey items: 1) We hold each other accountable for contributing equitably, 2) We hold each other accountable for the quality of our work, and 3) We hold back from seeking credit for our own contributions, but are quick to point out those of our teammates. Teaching teams that

develop these dimensions of teamwork that focus on equity, accountability, trust and strategic relationship building will develop a strong basis to collaborate with students and their parents to improve student performance.

Communicate Effectively with Parents

Teaching teams should expand their use of the web to improve external communications and public relations, while keeping in mind that some parents are unable to access the web. Teachers should continue direct communications by telephone, parent conferences and mail. This recommendation stems from the finding that the frequency of communicating electronically with parents correlates positively with student performance. Teaching teams would do well to expand their use of the web to improve external communications and public relations. Teachers should use the web or direct email to publicize school and team events and special activities such as field trips and dances. With timely information, parents could plan their work schedules to volunteer as chaperones and participate more fully in the life of the school.

Teaching teams could post the daily homework and longer-term project assignments on line. Reports of student progress and performance could also be securely available on line. This information would be especially helpful as parents hold their children accountable for completing homework and projects on time.

Effective collaboration with parents in support of student learning depends on timely information. Teaching teams should employ the latest technology to communicate with parents. Sharing information via the web and email will facilitate parent teacher the

exchange of information and build trust in the team as students, parents and teachers learn from each other.

Empower Students. Teaching Teams Should Collaborate with Students when Making Decisions that Affect Their Instruction

The study found that when teaching teams provide opportunities for students to influence and help direct their instruction, academic performance improves. Teachers who want to maintain absolute authority over planning and instruction may object to this recommendation, but the results are clear. To become more effective, teaching teams need to learn from their students.

A number of team activities could make this recommendation operational. The first and most obvious route to empowering students involves establishing team and school rules that are coherent and philosophically consistent. This process may start at the school or team level with meetings led by students using common parliamentary procedures to debate and make team decisions. Decision-making is an important element of social development as adolescents take more responsibility for self-regulation. These team meetings should be empowered to make any decision so long as it does not adversely affect student safety or learning. Team meetings would authentically parallel the Town Meeting form of government traditionally found in New England.

Another team activity derived from this recommendation would find teachers using assessment <u>for</u> learning. Teachers will require professional development and training to effectively use assessment <u>for</u> learning. Such professional development will empower teaching–learning relationships among teachers and students to work more effectively by collaborating on the means to achieve those goals. This collaborative

approach based on frequent formative assessments builds self-confidence in the students and teachers because it results in more responsive planning and effective instruction. Students see themselves as empowered, not passive, learners by reflecting on what they have accomplished and taking responsibility for their progress.

Teaching teams attending to insights and direction provided by their students could lead to adventurous instruction. As described by Cohen,

> Adventurous instruction makes distinctive demands on teachers. It opens up uncertainty by advancing a view of knowledge as a developing human construction and of academic discourse as a process in which uncertainty and dispute play central parts. It increases the difficulty of academic work by replacing memorization of facts and rules with disciplined inquiry and argument. And it invites teachers to depend on students to produce and unusually large share of instruction. [Cohen, 1988, p. 35]

This description of adventurous instruction illustrates the collaboration of teachers and students for learning supported by the findings of this study.

Cohen's adventurous teaching is but one of many strategies to engage and empower students in their learning. Gardner's (2000) theory of multiple intelligences poses eight different intelligences to account for the broad range of human potential. According to Gardner eight different pathways to learning correspond with the eight intelligences. To engage and empower all students, teachers *and* their students need to know which of the eight pathways to learning work best for each individual. Teachers can use this knowledge to strategically plan their instruction to match the pathways of learning necessary to engage every student.

Reflective practice is a fourth activity that supports the collaborative relationships among teaching colleagues and their students found by this study to correlate positively with student performance. As previously discussed in Recommendations for Theory,

reflective practice is research in action. According to Schön," When a practitioner becomes a researcher into his own practice, he engages in a continuing process of self-education" (Schön, 1983, p. 299). Reflective practice requires partnerships based on modes of collaboration with colleagues, students and parents. On effective teaching–learning teams teachers would support one another to reflect-in-action. Team meetings would include discussions of the effectiveness of one another's teaching strategies based on observed student outcomes.

Team meetings, assessment for learning, adventurous instruction and reflective practice are all activities that empower the student as learner and, at times, as teacher as well. Each of these practices also empowers teachers to see themselves as learners and can help transform teaching teams to become learning teams.

Build Capacity for Standards-Based Instruction

The results of this study indicate that teaching teams can become too independent to support the school-wide goals for all students achieving the state standards. The call for building capacity for standards-based instruction gives the first three recommendations greater reason and purpose for implementation. The intended benefits of those recommendations—strong relationships and good communications—have greater meaning as they build the capacity of the teaching team to improve instruction by focusing on the standards. This recommendation is based on the finding that teaching teams should not rely on teacher-made assessments to plan instruction. It also addresses the second theme to emerge from the results of this study—Teaching teams can get too independent.

While a degree of teaching team autonomy is essential to effectively respond to student needs, this study found evidence that activities to establish a unique team identity does little to improve student performance. Advocates of teaching teams may find these results disconcerting because team identification is popular, brings students together and is fun. Although establishing a team motto, mission, philosophy, logo, song, bulletin board, apparel and awards may have other benefits, time spent to develop these attributes cannot be justified on the basis of what appears to be a sacrifice in terms of student performance in reading and mathematics. This finding is not be surprising because activities related to team identity may not be focused on the standards for student performance measured by the NECAP.

From the evidence of this study, it appears that teacher-made assessments also miss the mark if their purpose is to improve student performance on the NECAP. As the public and the federal government continue to value NECAP results, the Vermont DOE should provide teachers with formative assessment materials that enable them to plan for instruction more effectively. Alternatively following Popham's approach, professionally development should be provided for teachers to learn how to design assessments to provide the information they need to make effective instructional decisions. The key is to develop formative assessments or assessments for learning that provide diagnostic insights to improve learning. For example, teachers and parents need to learn whether student misunderstandings in mathematics are computational or conceptual. Providing mini-versions of summative assessments may measure achievement more frequently, but do little to improve teaching and learning. Members of a teaching team could use state approved formative assessment activities and lessons as the basis for action research and

reflective practice. As a result the same group of teachers would become a learning team focused on the standards for student performance. Only then would the team be able to fulfill NMSA's call for middle schools that insure equity and excellence for every student.

Teaching teams that rely on Vermont's Grade Level Expectations (GLEs) and portfolios in mathematics and writing also correlated negatively with student performance. Is this due to a lack of teacher knowledge, skill, or motivation? Most likely it is a combination of the three, but assuming that the levels of teaching skill and motivation were more or less evenly distributed across the teams participating in this study, the Vermont DOE and school leaders should undertake measures to insure that teachers understand the GLEs and the rubrics for portfolio assessment. Professional discussion focused on the meaning of the GLEs and portfolio rubrics would promote reflective practice and could stimulate action research on the team. Learning how to plan instruction more effectively to meet these performance standards could and should be the continuing focus of any team of teachers. If we want teachers to teach and assess better, the Vermont DOE and building administrators must do three things: (1) teach, (2) model, and (3) monitor these professional endeavors. In schools with learning teams, "Supervision would concern itself less with monitoring the teacher's coverage of curriculum content than with assessment and support of the teacher's reflection-in-action" (Schön, 1983, p. 334).

Without a carefully balanced and strategic plan for implementation, this recommendation—build capacity for standards-based instruction—could result in teaching teams paying too much attention to the GLEs and NECAP scores. Such a

narrow focus would restrict the capacity of teachers to improve their teaching by inhibiting a teaching team's use of reflective practice and adventurous instruction. Using this study's survey instruments to measure various characteristics and activities of a teaching team could be the first step in the transforming teaching teams learning to building their capacity for standards-based instruction. These tools for professional reflection include the individual survey, *How We Function as a Team,* and the collaborative, *Teaching Team Survey* (Appendices C & D). Principals and superintendents would do well to collaborate with their teachers directly in the process of this transformation. To improve the performance of all students, administrators should encourage and support reflective practice and action research as teaching teams become learning teams.

Assign Teachers Strategically to Teaching Teams

This recommendation falls under the third theme that emerged from the analysis of the findings—How teaching teams are formed affects student performance. The results of this study indicate that considering teacher personality and temperament when making teaching assignments is counterproductive. The extent to which the principal assigns teams by balancing teacher personalities or temperaments correlates negatively with student performance. This study also found that when compared by school, the extent to which a principal assigns teams by balancing teacher personalities or temperaments is negatively associated with a school's AYP status.

Given these results that student performance does not benefit from such considerations by the principal, assigning teachers strategically by other criteria may be

more effective. Perhaps an approach to teacher assignment that is less deferential to teacher personalities and temperaments challenges team members to respect their differences in teaching styles and communicate collaboratively to establish team goals. Diversity among colleagues may enable the teaching team to meet the needs of a wider range of student interests and learning styles.

Taken in the context of the other findings of this study, principals and teachers should pay less attention to teacher personality and temperament, but rather insure a diversity of teaching styles on a team. Teaching teams with a greater diversity of styles are more likely to promote learning for a wider range of students' modes of learning. Diversity among colleagues on a teaching team would also provide greater opportunity for teachers to learn more from their students and each other.

Recommendations for Education Policy

Three themes that emerged from the analysis of the findings in the previous chapter are: (1) Build relationships on knowledge, trust, collaboration and accountability, (2) Teaching teams can get too independent, and (3) How teaching teams are formed affects student performance. In this section, five recommendations for policy at the state and local levels address these three themes. The first recommendation supports the primary theme—Build relationships on knowledge, trust, collaboration and accountability.

Provide Adequate Resources to Effectively Coordinate Multi-Agency Plans for Students

The goal of Vermont's Act 264 is to improve the lives and future prospects of trouble youth. The act mandates an interagency team representing all public agencies to coordinate their efforts to assist students who have behavioral and legal problems. Frequently, the student clients of Act 264 interagency teams must also overcome disabilities as they struggle to succeed in school. When a middle school student is the subject of a 264 Team, a member of the student's teaching team usually represents the school. Act 264 students oblige teachers to rethink middle school teams as the public holds them accountable to enable all students to meet NCLB standards. This study found that a teaching team's use of the web to communicate with parents was associated with improved student performance, but the families of 264 students are usually unable to access this means of communication. Teaching teams can no longer work with students isolated from the real needs of parents and family. Schools must work with outside agencies to address all the family's circumstances that may be contributing to student failure. This leaves teachers asking, "Where is the social reform of parents and families to support holding students and their schools accountable for academic performance?"

As the demand for public accountability of tax expenditures rises, the social service agencies that could work with a school's students and families see their resources reduced for political reasons. In Vermont, 264 Teams are mandated by law to bring all agencies together with the school to coordinate their resources to meet the needs of students at risk of dropping out of school. This legislation obliges all social services to coordinate their efforts and pool their resources for maximum benefit to the student client. The representatives of these various resource poor agencies dutifully meet with

good intentions. Plans are made, but without coordinated leadership and accountability the efforts by each agency are disconnected and ineffective. Besides caring for the individual student, the only characteristic common to all members of a 264 Team is that they don't have enough resources to have much effect. As a result, these legally mandated 264 Teams exemplify Lencioni's five dysfunctions of a team. (Lencioni, 2002.)

According to Lencioni, the first and most basic dysfunction of a team is the absence of trust. The members of a 264 Team each represent a different school, agency or organization. Typically they have no daily contact or working relationship with each other. Their only connection is the student client. The same 264 Team rarely meets more than two or three times. Without more professional contact time, a high level of trust is unlikely to develop even among the most dedicated agency representatives.

The 264 Teams are just as vulnerable to Lencioni's next three dysfunctions—fear of conflict, lack of commitment, and avoidance of accountability. Without trusting relations among the team members, each takes care not to contradict or object to the other. Avoiding conflict and accountability are usually priorities for each individual at 264 meetings. Similarly, while each agency professes concern and a strong desire to assist the client student, good intentions take the place of real commitments to achievable goals within a specific timeframe. The absence of achievable goals inevitably results in Lencioni's fifth dysfunction of a team—inattention to results.

Unless the legal mandate for 264 Teams is revised to provide sufficient resources and the leadership to hold agencies accountable, these teams have little prospect of effectively addressing the needs of their students.

The following two recommendations respond to the second theme that emerged from the findings—Teaching teams can get too independent.

Base Supervision and Evaluation More on Student Performance and Less on Coverage of Curriculum

Supervision and evaluation of staff is inadequate to improve student performance. Apart from having insufficient time to effectively supervise their teachers, principals do not set clear goals for student performance. Student performance should be an integral part of teacher evaluation. Improving school policies and contracts to establish the process for establishing student performance goals is essential, but in addition, for teaching teams to constantly improve their effectiveness, policies should also support professional collaboration, reflective practice and action research.

Teacher supervision and evaluation must reflect this change of focus from teachers covering the curriculum to requiring professional practices as a team that focus on the standards, formative assessment, strategic planning, and effective instruction. Groups of teachers should be encouraged to collaborate, critique and mentor each other's work in the classroom as members of teaching teams. This focused collaboration would promote teachers' learning and link their own professional development to the performance of their students.

Unfortunately, as Cohen points out, "the organization of U.S. education generally seems to impede communication about practice" (Cohen, 1988, p. 18). To begin to remedy this, the collective bargaining agreements legally defining the procedures for professional supervision and evaluation will need to be renegotiated to support collaboration, reflective practice and action research by all teachers. For example

contractually guaranteed planning time does not insure collaboration or reflective practice. The renewal of professional contracts for teachers and principals should be based on evidence of collaboration, reflective practice and action research that improves what Lencioni would insist is the school's bottom line—student performance. These changes will not come easily while collective bargaining agreements are negotiated to protect teacher job security and the status quo.

Provide Professional Development and Formative Assessments to Insure that All Teachers Use the Standards to Effectively Plan Instruction

This recommendation is related to and supports the recommendation for practice—Build capacity for standards-based instruction. Effective standards-based instruction requires both a clear understanding of the GLEs and formative assessment materials to provide diagnostic insights to improve instruction for every student.

Given the legislature's commitment to the New England Common Assessment Program (NECAP), the Vermont DOE may improve student performance by providing teachers with formative assessment materials that enable them to plan for instruction more effectively. Such formative assessments would provide diagnostic information for the individual student that can be used by teachers to continuously adjust how and what they teach. They must be carefully designed to provide the information teachers need to inform effective instructional decisions. Designing and implementing a sequence of formative assessments will take time, time to re-teach, and more crucially, time to learn to re-teach for improved student outcomes. Formative assessment also requires a sustained focus on the standards for student performance. Differing opinions about what teachers and students are supposed to do and how well they are expected to do it cause

confusion. Such confusion makes collaborative teaching with clear performance goals in view challenging if not impossible, but strong differences of profession opinion should be anticipated and overcome as Matusak's storming phase of teaming. According to Matusak (1997) the storming phase must precede the norming and performing stages of team development.

The following two recommendations respond to the third theme that emerged from the findings—How teams are formed affects student performance.

Assign Special Education Students Equally Across All Teaching Teams

The question of including all students heterogeneously across all instructional teams is raised by this study. Without data tracking individual student's performance over time, this study's results regarding a special educator on the teaching team are open to other interpretations. Given these limitations and reservations, this recommendation is intended to stimulate further discussion and the development of policy to provide for developmentally appropriate special education in middle schools. To provide support for special needs students on heterogeneous teams, special educators should be assigned to all teaching teams in a school or shared among teams. If available, paraprofessionals should collaborate with the special educator and teaching team to extend this support directly in the regular classes on each team. This recommendation is consistent with the basic tenant of the middle school model as outlined in *This We Believe* that heterogeneously grouping for instruction is effective and developmentally appropriate for early adolescents (Erb, 2001).

Combine the Smallest Schools in Vermont to Create More Effective Instructional Units

The finding that students on smaller teams perform less well than their peers on larger middle school teams supports advocates of school consolidation. This recommendation may be welcome by some, but most parents and teachers will find it hard to follow. The instructional ideal popularized by the aphorisms "Small is beautiful," and "Smaller is better," is pervasive among parents, educators and policy-makers.

This recommendation pertains only to Vermont's smallest schools. Given this study's student enrollments on teams that range from 5–81, the recommendation to form larger teams is consistent with other empirical studies on class size. Team enrollments at the lower end of this range appear to be too small to benefit student performance and may not warrant the additional per pupil costs.

Given its contextual limitation, this recommendation should not be misconstrued to support a bigger is better approach to teaching teams and instructional groups. Other rural states may find this recommendation worth considering, but not without further study.

Changes in education policy at the state and local levels could help facilitate these recommendations. The state departments of education for Vermont, Rhode Island, and New Hampshire could take the policy initiative regarding professional development to insure that all teachers understand the state standards (GLEs) and how to interpret their students' NECAP scores to effectively plan for instruction. The state legislature should amend Act 264 to provide effective leadership and financial support to enable 264 Team clients to realize the potential benefits of interagency collaborations. Legislators should

provide the political leadership to implement the Vermont Department of Education's recommendations on school district consolidation to form more effective instructional units.

At the local level, school board policies and collective bargaining agreements with teacher unions could be changed to support teacher collaboration, reflective practice and action research. School boards should also support and defend principals who make teacher and student assignments to insure a diversity of teaching and learning styles and include students with special needs on all teams.

Recommendations for Research

Perhaps the question of what makes teaching teams effective is too complex to be adequately examined by a broadly inclusive study such as this. Further research in this field should consider the reformed teaching team framework of this study as a basis for the analysis of findings. In addition to the revisions previously described, the theoretical lens may be improved by including the theory of pedagogy. The Eight Dimensions of the Middle School Model provide a more powerful normative lens for this conceptual framework. With these conceptual tools in hand, more narrowly focused studies may address the limitations of this work, and shed light on the following questions raised by the results.

1. What aspects of teacher personality and temperament should be considered when forming teaching teams? Among other attributes, a teacher's teaching style, content knowledge, and teaching philosophy could be studied.

2. How does the assignment of a special educator to a team affect the performance of all students over time? A more narrowly focused and controlled study of special educators on teaching teams may answer this and other questions raised by this study's finding.
3. Why do two aspects of internal team dynamics correlate with student performance in reading, while another dimension correlates only with writing performance? Why are there no correlations for aspects of internal team dynamics with student performance in mathematics?
4. Why do indicators of a distinct team identity correlate negatively with student performance? What activities to establish or reinforce team identity support student achievement?
5. To what extent do teaching teams with a high degree of control over rules, time, and curriculum pursue instructional initiatives contrary to performance-based standards assessed by the NECAP? The finding that teaching teams with control over team rules, instructional time and curriculum integration correlate negatively with student performance challenges core beliefs of middle school advocates articulated in *This We Believe* (Erb, 2001).
6. Why do schools with team enrollments less than 70 have lower student performance on state standards-based tests? Can the results of this study be replicated using a broader sample? Rural states may find the recommendation of this study to form larger teams worth considering, but not without further research.

7. What characteristics of advisory groups improve student performance? Examine advisory group content and supervision as well as other characteristics.
8. What are the effects of student awards or recognitions for high achievement, and the performance of all students on the teaching team?
9. In what ways should teaching teams collaborate in standards and curriculum work, to enable all of their students to meet the state standards?

Replicating this study in New Hampshire and Rhode Island may reveal the same or additional characteristics and activities of teaching teams that correlate with student performance on the NECAP tests. This would be particularly useful in corroborating or refuting the more surprising findings and non-findings of this study.

Any replication of this study should consider using additional measures of student performance. Dennis Littky (2004) challenges schools to engage students in authentic learning experiences culminating in exhibitions to demonstrate achievements in meeting rigorous standards. He views statewide tests as irrelevant at best, and at worst, an impediment to academic excellence. Indirect indicators of achievement such as students' perceptions of their learning and students' attitudes towards their teachers and schools should be considered.

Another aspect of research in this field requiring greater focus is pedagogy. Using the conceptual framework for teaching teams including the Eight Dimension of the Middle School Model described in Chapter 5, further research should examine what instructional methods will improve student performance. More importantly, what methods works best for which students, and how can teachers make effective

instructional decisions? How can teachers employ reflective practice and action research to improve student achievement?

The findings of this study derived from quantitative methods. Qualitative methods could be applied to answer specific questions raised by this research. Particularly promising for qualitative study are the following:

1. To what extent should students be empowered to determine team rules, instruction and celebrations?
2. In responding to the NCLB Act's mandates, are teaching teams too focused on high stakes testing and using student awards or recognitions to be effective for all students?
3. Why do indicators of a distinct team identity correlate negatively with student performance?
4. How are advisory groups related to student performance?
5. What characteristics of teachers should be considered when forming teaching teams? and
6. In what ways are larger schools and classes really better for early adolescents?

Conclusion

I set out to find what characteristics and activities of teaching teams are linked to student performance. A comprehensive number of teaching team attributes were examined using 150 quantitative measures. The results and subsequent analysis of the findings using the teaching team conceptual framework generated new knowledge about

how teaching teams affect student performance. This new knowledge transforms my understanding of theory, research and practice of education at the middle level.

Advocates of middle school principles might find some of the results of this study disturbing. Despite controlling for the effects of family income, the data supports only a few of the principles declared essential by NMSA and state affiliate organizations. The middle school model calls for developmentally appropriate instruction to insure equity and excellence for every student. Many teaching teams implement developmentally appropriate instruction by first caring for the social development of their students. In the era of NCLB, advocates for developmentally appropriate middle schools must focus on what is most important—balancing the child's needs with the public's demand for cost-effective results. Middle schools will be held accountable for their students' performance. Despite political and philosophical opposition to the excesses of NCLB's focus on high stakes testing, student learning is the bottom line that will continue to be the primary mission and measure of the nation's schools.

Many team activities popular among middle school teachers failed to correlate positively with student performance. Among these activities, teacher-made assessments and indicators of a distinct team identity correlated negatively with certain measures of student performance. These results dispel the mythic belief that the model middle school is an instructional ideal in the land of the nice. The three themes emerging from the results provide direction for reforming instruction in the land of the real. The guiding themes for this instructional reform that emerged from the findings of this study were: (1) Build relationships on knowledge, trust, collaboration and accountability, (2) Teaching

teams can get too independent, and (3) How teaching teams are formed affects student performance.

While the first of these is affirmative and points in a direction to follow, how do the second and third themes provide direction for practitioners in the field? The second—Teaching teams can get too independent—has to do with the importance of the teaching team being accountable to education's key stakeholders; the students, the parents, the school, and the state. Accountability is also key to the third emergent theme—How teaching team are formed affects student performance. The formation of teams involves many critical considerations. Among these principals must consider team size and well as student and teacher assignment. Principals should take steps to ensure that team members get good at listening and responding to the frequently differing views and perspectives of their colleagues, students and parents. The formation of teaching teams should be held accountable to provide educational equity and excellence for each student.

With these revisions, the three themes are now more clearly complimentary in providing direction to teaching teams. Highly effective teams increase the extent to which team members seek out, consider and hold each other accountable to the views of their key stakeholders: students, parents, colleagues, school, and the state.

Taken together this thematic direction and the recommendations made by this study outline a plan of action that, at the very least, could stimulate professional discourse and public debate. If implemented, these recommendations could strengthen teaching teams and improve their students' performance in reading, mathematics and writing. When fully implemented teaching will be transformed to become learning teams that

reflect empowered relationships among all members of the team. As Bishop and Boyer found, effective teams share "power with their students as facilitators, collaborators, negotiators, guides, and co-learners" (Bishop & Boyer, 2004, p. 14). As a result teachers, students and their parents on learning teams can learn from each other and collaborate to improve student performance. Learning teams can make real progress towards meeting the goal of NCLB as well as the model middle school's twin principles of equity and excellence for every adolescent.

In conclusion, teachers on effective instructional teams do more than teach. They synthesize curricula, assessment and instruction in their daily work. They constantly learn from their teaching as they build their capacity for standards-based instruction. As colleagues on learning teams, teachers target the standards and use assessments for learning, adventurous instruction, reflective practice, and research in action to make the instructional decisions required every day to improve student performance.

Afterword

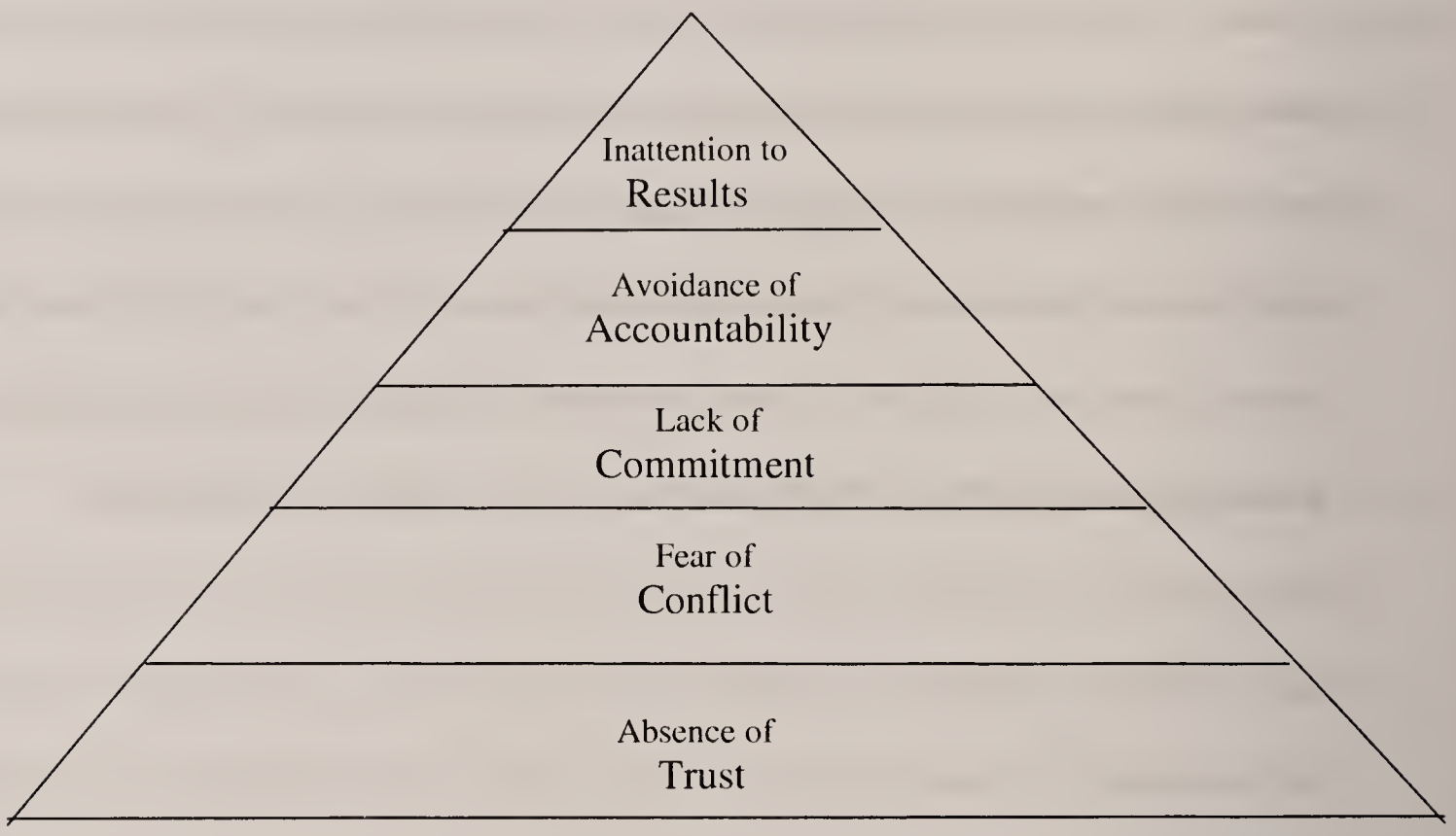
Reflecting the importance of teaching teams becoming nurtured and nested in the attributes of learning teams, this study could be re-titled, *Teaching–Learning Teams and Student Achievement in Vermont's Middle Schools.*

This research expanded my appreciation of the complexity of dimensions and nuance affecting student performance and their teaching teams. As a middle school principal, my practice will change to address the overarching theme that emerged from the findings. This theme—effective teams increase the extent to which team members seek out, consider and hold each other accountable to the views of their key stakeholders:

students, parents, colleagues, school, and the state—may serve to guide the decision-making of other middle school educators as they struggle to make schools work for all students. This theme brings to focus the most valuable lesson gained by this study—the most effective teaching teams in middle schools are also learning teams, teams that inform their teaching by learning from their students through collaboration, reflective practice, adventurous teaching and research in action. Once transformed these teaching–learning teams will empower a school community to realize the educational excellence and equity promised by the Eight Dimensions of the Middle School Model.

APPENDIX A

LENCIONI'S FIVE DYSFUNCTIONS OF TEAMS



(Lencioni, 2002, p. 188)

Lencioni's Diagnostic Team Assessment

This questionnaire is a diagnostic tool to evaluate your team's susceptibility to the five dysfunctions.

Directions: Use the scale below to indicate how each statement applies to your team. It is important to evaluate the statements honestly and without over-thinking your answers.

3 = Usually
2 = Sometimes
1 = Rarely

____ 1. Team members are passionate and unguarded in their discussion of issues.
____ 2. Team members call out one another's deficiencies or unproductive behaviors.
____ 3. Team members know what their peers are working on and how they contribute to the collective good of the team.
____ 4. Team members quickly and genuinely apologize to one another when they say or do something inappropriate or possibly damaging to the team.
____ 5. Team members willingly make sacrifices (such as budget, turf, head count) in their departments or areas of expertise for the good of the team.
____ 6. Team members openly admit their weaknesses and mistakes.

____ 7. Team meetings are compelling, and not boring.
____ 8. Team members leave meetings confident that their peers are completely committed to the decisions that were agreed on, even if there was initial disagreement.
____ 9. Morale is significantly affected by the failure to achieve team goals.
____10. During team meetings, the most important—and difficult—issues are put on the table to be resolved.
____ 11. Team members are deeply concerned about the prospect of letting down their peers.
____ 12. Team members know about one another's personal lives and are comfortable discussing them.
____ 13. Team members end discussions with clear and specific resolutions and calls to action.
____ 14. Team members challenge one another about their plans and approaches.
____ 15. Team members are slow to seek credit for their own contributions, but quick to point out those of others.

Scoring: Combine your scores for the preceding statements as indicated below.

Dysfunction				Total
Absence of Trust	Statement 4: ___	Statement 6: ___	Statement 12: ___	
Fear of Conflict	Statement 1: ___	Statement 7: ___	Statement 10: ___	
Lack of Commitment	Statement 3: ___	Statement 8: ___	Statement 13: ___	
Avoidance of Accountability	Statement 2: ___	Statement 11: ___	Statement 14: ___	
Inattention to Results	Statement 5: ___	Statement 9: ___	Statement 15: ___	

A score of 8 or 9 is a probable indication that the dysfunction is not a problem for your team.
A score of 6 or 7 indicates that the dysfunction could be a problem.
A score of 3 to 5 is probably an indication that the dysfunction needs to be addressed.

Regardless of your scores, it is important to keep in mind that every team needs constant work, because without it, even the best ones deviate toward dysfunction (Lencioni, 2002, p. 192-4).

APPENDIX B

SPSS DATA BASE FIELD DEFINITIONS AND SOURCES

SPSS Field	Field Definition	Source
PSTMCODE	Vermont Public School identification number (SprSchCode.Team)	VT DOE
ADJSCHED	Adjust schedule to facilitate special activities or projects.	Team
ADVMINS	Length of advisory group meetings in minutes.	Team
AGENDA	Team works from agenda	Team
ALLTMMTG	Hold team meetings including all students and teachers	Team
ALOWTUIT	VT allowable tuition for 2004–2005 SY includes long-term facilities costs	VT DOE,
APPAREL	Team hat, tee-shirt, etc.	Team
AWARD	Team awards/ recognition	Team
BDGTEPUP	$ FY04 Budget/Equalized Pupil	VT DOE
BQ1	We are passionate in our discussion of issues.	Teacher
BQ2	We point out one another's problematic or unproductive behaviors	Teacher
BQ3	We know what our teammates are working on and how each contributes to the collective good of the team.	Teacher
BQ4	We quickly and genuinely apologize to one another.	Teacher
BQ5	For the good of the team, we willingly make sacrifices (budgets or instructional time.)	Teacher
BQ6	We openly admit our weaknesses and mistakes.	Teacher
BQ7	Team meetings are compelling, not boring.	Teacher
BQ8	We leave meetings confident that our teammates are completely committed to the decisions reached.	Teacher
BQ9	Our morale is significantly affected if we fail to achieve team goals.	Teacher
BQ10	The most important-and difficult-issues are put on the table to be resolved.	Teacher
BQ11	We are deeply concerned about the prospects of letting each other down.	Teacher
BQ12	We know about one another's personal lives and are comfortable discussing them.	Teacher
BQ13	We end discussions with clear, specific resolutions and calls to action.	Teacher
BQ14	We challenge one another about our plans and approaches.	Teacher
BQ15	We hold back from seeking credit for our own contribution.	Teacher

SPSS Field	Field Definition	Source
BQ16	We assess whether we have a shared understanding of what we're working on.	Teacher
BQ17	We divide up work as individuals or subgroups and report back to the team.	Teacher
BQ18	We work together so that team decisions genuinely represent and benefit from the ideas and standards of each team member.	Teacher
BQ19	We give one another the benefit of the doubt - that is, we suspend any initial negative judgments.	Teacher
BQ20	We hold each other accountable for contributing equitably.	Teacher
BQ21	We hold each other accountable for the quality of our work.	Teacher
BQ22	We ensure that everyone feels accepted and heard.	Teacher
BQ23	We take steps so that everyone feels safe enough to question an apparent consensus.	Teacher
BQ24	We try to find ways to use or build on everyone's ideas.	Teacher
BULLETIN	Team bulletin board	Teaching Team
CEFFRANK	Cost Effective Rank by Cohort Group (%)	VT DOE
CLASSMGN	Coordinate class management and instruction.	Teaching Team
COMMIT	Committed to the team	Teaching Team
COMPAT	Interpersonal compatibility	Principal
COMSTAFF	Meet with counselor; communicate with other staff.	Teaching Team
COMTESTS	Team relies on commercial standardized tests to plan instruction.	Teaching Team
CONTROL	Extent of control over rules, daily schedule for instruction and curriculum integration.	Teaching Team
CONTROL2	Average of TMRULES, INTEGCUR, and INSTRTIM	Teaching Team
CURRASSE	Team coordinates the scheduling of homework assignments, tests, quizzes, projects, and uses interdisciplinary thematic units for instruction.	Teaching Team
DAILYSCH	Controls routine daily schedule.	Teaching Team
DEVRULES	Team develops rules collaboratively with students.	Teaching Team
DISCTOG	Team handles discipline problems together.	Teaching Team
DIVINSTR	Schedules how instructional time is divided up among team members.	Teaching Team
EMAILWB	Announcements via email or website.	Teaching Team
EXPRESS	Free to express differences	Teacher
EXPRIDE	Students express pride in their team.	Teaching Team
GLETESTS	Team plans instruction using state grade level expectations and state tests.	Teaching Team

SPSS Field	Field Definition	Source
GRCONFIG	Grade levels on team	Teaching Team
GRPREGRP	Coordinates grouping and regrouping of students for instruction.	Teaching Team
HWHOTLNE	Homework via hotline, email or website	Teaching Team
HWSCHED	Coordinates scheduling of homework assignments.	Teaching Team
IDUS	Number of interdisciplinary thematic units taught per year	Teaching Team
INCLUDE	All feel included.	Teacher
INFLUENC	Students influence regular classroom learning.	Teaching Team
INSTRTIM	Coordinates how instructional time is divided up among team members.	Teaching Team
INTACT	Keeping successful teams intact	Principal
INTEGCUR	Team controls curriculum integration.	Teaching Team
JOINTPLN	Average of DEVRULES and PLANCELE	Teaching Team
LGALICEN	MS license? 1 = yes, 0 = no	Teaching Team
LGATEACH	Language Arts teacher's years of experience	Teaching Team
LGATEAM	Language Arts teacher's years on the team	Teaching Team
LOGO	Team logo or mascot	Teaching Team
MDINCOME	Median Income for Calendar yr 03	VT DOE
MEETADV	Advisory groups meet.	Teaching Team
MISSION	MISSION —Written team mission	Teaching Team
MOTTO	Team motto or slogan	Teaching Team
MTGCOUNS	Number of Team meetings w/ counselor per week	Teaching Team
MTGSPED	Number of Team meetings w/ Special Educator per week	Teaching Team
MTHLICEN	Middle School Mathematics license? 1 = yes, 0 = no	Teaching Team
MTHPORTF	Team relies on VT math portfolios to plan instruction.	Teaching Team
MTHTEACH	Math teacher's years of experience	Teaching Team
MTHTEAM	Math teacher's years on the team	Teaching Team
NEWSLTR	Team newsletter	Teaching Team
NNECAP	Number of students tested, NECAP Mathematics 10/05	VT DOE
NUMMTGS	Number of team meetings per week	Teaching Team
PCONFER	Team conferences with a parent.	Teaching Team
PEERMED	Team uses peer student mediation.	Teaching Team
PERIEP	Percentage of students on the team with IEPs	Principal
PHILOS	Written team philosophy	Teaching Team
PHILOBUL	Sum of PHILOS —Written team philosophy + BULLETIN —Team bulletin board	Teaching Team
PLANACTS	Team involves students in planning activities.	Teaching Team
PLANCELE	Team involves students in planning celebrations.	Teaching Team
SPSS Field	Field Definition	Source

PLANFTS	Team involves students in planning field trips.	Teaching Team
PLANINST	Team plans instruction using portfolios and teacher assessments.	Teaching Team
PNIGHTS	Parent Nights	Teaching Team
PRFEMALE	Percentage of female students on the team	Principal
PRLES75K	Percentage of households with less than $75,000 income for 2004 CY	VT DOE
PRLUNCH	School % of free/reduced lunch students	VT DOE
PROJSCHD	Coordinates scheduling major projects.	Teaching Team
PRSTEVNT	Team events involving parents and students together	Teaching Team
PRTSELEC	The team uses a telephone hotline, email or website to post announcements and homework.	Teaching Team
PRTSORAL	Team communicates with parents via Parent Nights, parent conferences and telephone contacts.	Teaching Team
PUSH	Push each other to improve	Teacher
PVOLS	Parents volunteers	Teaching Team
QUIZSCHD	Coordinates scheduling of quizzes	Teaching Team
RELYON	Average of WRTPORTF, MATHPORT, TCHRASS, and VTGLES	Teaching Team
RELYON2	Average of WRTPORTF, MATHPORT and VTGLES	Teaching Team
REVGOALS	Team reviews goals and objectives.	Teaching Team
RNKBEPUP	VT Rank FY04 Budget/ Equalize Pupil (number)	VT DOE
SAMEPAGE	All work together.	Teacher
SBALANCE	Balancing student gender, ethnic background, or income	Principal
SCHROLL	School enrollment 11/1/04	VT DOE
SCILICEN	Middle School Science license? 1= yes, 0 = no	Teaching Team
SCITEACH	Science teacher's years of experience	Teaching Team
SCITEAM	Science teacher's years on the team	Teaching Team
SDTPLAN	Students help plan special activities, field trips, and celebrations.	Teaching Team
SELLEARN	Team involves students in selecting learning modes.	Teaching Team
SELTOPIC	Team involves students in selecting topics for study.	Teaching Team
SHAREOTH	Share ideas, practices or decisions with non-team staff.	Teaching Team
SHETERO	Balancing student aptitude or achievement — performance heterogeneity	Principal
SHOMO	Level student aptitude or achievement —performance homogeneity	Principal
SOCLICEN	Middle School Social Studies license? 1 = yes, 0 = no	Teaching Team
SOCTEACH	Social Studies teacher's years of experience	Teaching Team

SPSS Field	Field Definition	Source
SONG	Team song	Teaching Team
SPDLICEN	Middle School Special Education license? 1 = yes, 0 = no	Teaching Team
SPDTEACH	Special Education teacher's years of experience	Teaching Team
SPDTEAM	Special Education teacher's years on the team	Teaching Team
SPECIFIC	Schedule meetings explicitly to address specific aspects of your work.	Teaching Team
SPEDESL	Average of number of meetings with Special Educator and Counselor per week MTGSPED + MTGCOUNS	Teaching Team
SPENTPUP	Dollars Spent/Pupil by School FY04	VT DOE
STDADMIN	Student/Administrator Ratio 04-05 school year	VT DOE
STDAPT	Student aptitude or achievement.	Principal
STDLOOP	Students loop multiple years with the same teaching team.	Principal
STDTCHR	School Student/Teacher Ratio 04-05 (number)	VT DOE
SUPPORT	Mutual support combines Teacher Factors 2 (commitment) and 3 (inclusion)	Teacher
TCHRADMN	Teacher/Administrator ratio 04-05	VT DOE
TCHRASS	Team relies on teacher-designed assessments to plan instruction.	Teaching Team
TCHRCHOI	Teacher choice for team assignment	Principal
TCHRPERS	Balancing teacher personalities or temperaments	Principal
TELECONT	Telephone contact	Teaching Team
TESTSCHD	Coordinates scheduling of tests	Teaching Team
TMROLL	Team enrollment -# of students on the team (may include other grades)	Principal
TMRULES	Controls team rules.	Teaching Team
TMTHINGS	Number sum of MISSION, PHILOS, LOGO, SONG, BULLETIN, APPAREL, and AWARD	Teaching Team
TMTHING2	Number sum of MISSION, LOGO, SONG, BULLETIN, APPAREL, and AWARD	Teaching Team
TMTHING3	Number sum of MISSION, LOGO, SONG, APPAREL, and AWARD	Teaching Team
VTFRAMEW	Team relies on VT Framework of Standards for Student Performance to plan instruction.	Teaching Team
VTGLES	Team relies on VT Grade Level Expectations (GLEs) for Student Performance to plan instruction.	Teaching Team
VTTESTS	Team relies on VT testing (NECAPs) to plan instruction.	Teaching Team
WRDECISN	Written record of team decisions	Teaching Team
WRTPORTF	Team relies on VT writing portfolios to plan teaching	Teaching Team

SPSS Field	Field Definition	Source
AYPSCH	The school made Adequate Yearly Progress (AYP)? (Yes =1, No = 0)	VT DOE
RDGLEV4	Percentage of students on the team proficient in reading with distinction	VT DOE NECAPs
RDGLEV3	Percentage of students on the team proficient in reading	VT DOE NECAPs
RDGHICUT	Percentage of students on the team proficient or proficient with distinction in reading (Level 3 or 4)	RDGLEV4 +RDGLEV3
R34ABEX	Expected percentage of students on the team proficient or proficient with distinction in reading achieving Reading Level 3 or 4	= -.697 (PRLES75K - 75.5%) + 64.3%
R34DELT	Delta (difference) between percentage who achieved and percentage expected to achieve Reading Level 3 or 4	RDGHICUT - R34ABEX
RDGLEV2	Percentage of students on the team partially proficient in reading (Level 2)	VT DOE NECAPs
RDGLOCUT	Percentage of students on the team achieving Reading Level 2, 3 or 4	RDGHICUT + RDGLEV2
R234ABEX	Expected percentage of students on the team achieving Reading level 2, 3 or 4	= -.253 (PRLES75K - 75.5%) + 89.8%
R234DELT	Delta (difference) between percentage on the team who achieved and percentage expected to achieve Reading Levels 2, 3 or 4.	RDGLOCUT - R234ABEX
RDGLEV1	Percentage of students on the team substantially below proficient in reading (Level 1)	VT DOE NECAPs
MTHLEV4	Percentage of students on the team proficient in mathematics with distinction (Level 4)	VT DOE NECAPs
MTHLEV3	Percentage of students proficient in mathematics (Level 3)	VT DOE NECAPs
MTHHICUT	Percentage of students on the team achieving Math Level 3 or 4	MTHLEV4 + MTHLEV3
M34ABEX	Expected percentage of students on the team achieving Math Level 3 or 4	= -.724 (PRLES75K - 75.5%) + 59.2%
M34DELT	Delta (difference) between percentage who achieved and percentage expected to achieve Math Level 3 or 4.	MTHHICUT - M34ABEX
MTHLEV2	Percentage of students partially proficient in mathematics (Level 2)	VT DOE NECAPs

SPSS Field	Field Definition	Source
MTHLOCUT	Percentage of students on the team achieving Math Level 2, 3 or 4	MTHHICUT + MTHLEV2
M234ABEX	Expected percentage of students on the team achieving Math Level 2, 3 or 4	= -.459 (PRLES75K - 75.5%) + 80.5%
M234DELT	Delta (difference) between percentage who achieved and percentage expected to achieve Mathematics Level 2, 3 or 4	MTHLOCUT - M234ABEX
MTHLEV1	Percentage of students on the team substantially below proficient in mathematics (Level 1)	VT DOE NECAPs
WRTLEV4	Percentage of students on the team proficient in writing with distinction (Level 4)	VT DOE NECAPs
WRTLEV3	Percentage of students on the team proficient in writing (Level 3)	VT DOE NECAPs
WRTHICUT	Percentage of students on the team achieving Writing Level 3 or 4	WRTLEV4 + WRTLEV3
W34ABEX	Expected percentage of students on the team achieving Writing Level 3 or 4	= -.698 (PRLES75K - 75.5%) + 54.4%
W34DELT	Delta (difference) between percentage who achieved and percentage expected to achieve Writing Level 3 or 4	WRTHICUT - W34ABEX
WRTLEV2	Percentage of students on the team partially proficient in writing (Level 2)	VT DOE NECAPs
WRTLOCUT	Percentage of students on the team achieving Writing Level 2, 3 or 4	WRTHICUT + WRTLEV2
W234ABEX	Expected percentage of students on the team achieving Writing Level 2, 3 or 4	= -.274 (PRLES75K - 75.5%) +86.6%
W234DELT	Delta (difference) between percentage who achieved and percentage expected to achieve Writing Level 2, 3 or 4	WRTLOCUT - W234ABEX
WRTLEV1	Percentage of students on the team substantially below proficient in writing (Level 1)	VT DOE NECAPs

APPENDIX C

THE INTERNAL TEAM DYNAMICS SURVEY

How We Function As a Team

School _____ Team Name_____

Before meeting as a team to complete the "Teaching Team Survey", please complete this survey individually. Using the scale below, evaluate the statements honestly and without over-thinking your answers.

	Rarely			Routinely
1. We are passionate in our discussion of issues.	1	2	3	4
2. We point out one another's problematic or unproductive behaviors.	1	2	3	4
3. We know what our teammates are working on and how each contributes to the collective good of the team.	1	2	3	4
4. We quickly and genuinely apologize to one another when we say or do something inappropriate or possibly damaging to the team.	1	2	3	4
5. For the good of the team, we willingly make sacrifices, such as budget or instructional time.	1	2	3	4
6. We openly admit our weaknesses and mistakes.	1	2	3	4
7. Team meetings are compelling, not boring.	1	2	3	4
8. We leave meetings confident that our teammates are completely committed to the decisions reached, despite any initial disagreements.	1	2	3	4
9. Our morale is significantly affected if we fail to achieve team goals.	1	2	3	4
10. During team meetings, the most important—and difficult—issues are put on the table to be resolved.	1	2	3	4
11. We are deeply concerned about the prospects of letting each other down.	1	2	3	4
12. We know about one another's personal lives and are comfortable discussing them.	1	2	3	4
13. We end discussions with clear, specific resolutions and calls to action.	1	2	3	4
14. We challenge one another about our plans and approaches.	1	2	3	4
15. We hold back from seeking credit for our own contributions, but are quick to point out those of our teammates.	1	2	3	4
16. We assess whether we have a shared understanding of what we're working on.	1	2	3	4
17. We divide up work as individuals or subgroups and then report back to the team.	1	2	3	4

	Rarely		Routinely	
18. We work together so that team decisions genuinely represent and benefit from the ideas and standards of each team member.	1	2	3	4
19. We give one another the benefit of the doubt—that is, we suspend any initial negative judgments.	1	2	3	4
20. We hold each other accountable for contributing equitably.	1	2	3	4
21. We hold each other accountable for the quality of our work.	1	2	3	4
22. We ensure that everyone feels accepted and heard.	1	2	3	4
23. We take steps so that everyone feels safe enough to question an apparent consensus.	1	2	3	4
24. We try to find ways to use or build on everyone's ideas.	1	2	3	4

Thank You for you prompt response! Please return to:

Steven John
P.O. Box 325
Marlboro VT 05344

APPENDIX D

TEACHING TEAM SURVEY

1. School Name: _____

2. Team Name: _____

3. Name of team member I may call if I have questions about your responses:

_____

4. How many students does your team serve? _____
5. Circle each of the grade levels that last year's team served: 5 6 7 8 9
6. Please check any of the following regular members of your team. Use the columns on the right to indicate their years of teaching, years of teaching on the team, and whether or not they have a middle level endorsement.

	Years of Teaching	Years on Team	Middle Level License for grades 5-8?
____Art teacher	_____	_____	Yes / No
____Computer Science teacher	_____	_____	Yes / No
____ESL teacher	_____	_____	Yes / No
____Family Consumer Science teacher	_____	_____	Yes / No
____Foreign Language teacher	_____	_____	Yes / No
____Guidance Counselor	_____	_____	Yes / No
____Health teacher	_____	_____	Yes / No
____Language Arts teacher	_____	_____	Yes / No
____Mathematics teacher	_____	_____	Yes / No
____Physical Education teacher	_____	_____	Yes / No
____Science teacher	_____	_____	Yes / No
____Social Studies teacher	_____	_____	Yes / No
____Special Education teacher	_____	_____	Yes / No
____Technology teacher	_____	_____	Yes / No
____Other teachers (Please specify)			
_____	_____	_____	Yes / No
_____	_____	_____	Yes / No

7. Check all that apply to your team.
   - ____ A written team mission
   - ____ A written team philosophy
   - ____ A team logo or mascot
   - ____ A team motto or slogan
   - ____ A team song
   - ____ A team bulletin board
   - ____ A team hat, tee-shirt or other apparel
   - ____ A team award or recognition

8. Circle the number of team meetings per week: 0 1 2 3 4 5

How often do you meet as a team with one or more . . .

	Never or Rarely	Monthly	Weekly	More Than Weekly
9. Special education teachers? (Check here if one is on the team ___)	1	2	3	4
10. ESL teachers? (Check here if one is on the team ___)	1	2	3	4
11. Guidance counselors? (Check here if one is on the team ___)	1	2	3	4

How often does your team . . .	Rarely			Routinely
12. Work from an agenda?	1	2	3	4
13. Schedule meetings explicitly to address specific aspects of your work?	1	2	3	4
14. Create and circulate to teammates a written record of team decisions?	1	2	3	4
14. Share ideas, practices or decisions with non-team staff?	1	2	3	4

How much control does your team have over the following:

	Little or None			Total Control
16. Team rules?	1	2	3	4
17. Routine daily schedule?	1	2	3	4
18. Adjusting schedule to facilitate special activities or projects?	1	2	3	4
19. Curriculum integration?	1	2	3	4
20, Scheduling how instructional time is divided up among team members?	1	2	3	4

How often does your team coordinate	Rarely			Routinely
21. Grouping and regrouping students for instruction?	1	2	3	4
22. Scheduling how instructional time is divided up among team members?	1	2	3	4
23. Scheduling homework assignments?	1	2	3	4
24. Scheduling tests?	1	2	3	4
25. Scheduling quizzes?	1	2	3	4
26. Scheduling major projects?	1	2	3	4

27. How many interdisciplinary thematic units does your team teach per year? _____

How often does your team rely on the following to plan instruction?

	Rarely			Routinely
28. Vermont testing	1	2	3	4
29. Other commercially available standardized tests	1	2	3	4
30. Vermont writing portfolios	1	2	3	4
31. Vermont mathematics portfolios	1	2	3	4
32. Student performance on teacher-designed assessments	1	2	3	4
33. Vermont Framework of Standards for Student Performance	1	2	3	4
34. Vermont Grade Level Expectations (GLEs) for Student Performance	1	2	3	4

How often does your team communicate with parents using the following?

	Never or Rarely	Monthly	Weekly	More Than Weekly
35. Team Newsletter	1	2	3	4
36. Announcements via email or website	1	2	3	4
37. Homework via hotline, email or website	1	2	3	4
38. Telephone contact	1	2	3	4
39. Parent Nights	1	2	3	4

How often . . .

40. Do parents volunteer?	1	2	3	4
41. Does the team hold events involving parents and students together?	1	2	3	4
42. Does the team handle discipline problems together?	1	2	3	4
43. Does the team conference with a parent?	1	2	3	4

How often does your team…..

43. Develop rules collaboratively with students	1	2	3	4
44. Review team goals and objectives	1	2	3	4
45. Involve students in selecting topics for study	1	2	3	4
46. Involve students in selecting learning modes	1	2	3	4
49. Involve students in planning activities	1	2	3	4
50. Involve students in planning field trips	1	2	3	4
51. Involve students in planning celebrations	1	2	3	4
52. Hold team meetings including all students and teachers	1	2	3	4
53. Use peer student mediation	1	2	3	4
54. Meet in advisory groups for _____ minutes	1	2	3	4
55. See students express pride in their team	1	2	3	4

Name 2 or 3 things about your team or about the way that you work together that make you proud.

_____

_____

_____

_____

_____

_____

Name 2 or 3 things about your team or about the way that you work together that you would like to improve.

_____

_____

_____

_____

_____

_____

Thank You! Please return to:

Steven John
P.O. Box 325
Marlboro VT 05344

APPENDIX E

C.A.S. TEAMING SELF ASSESSMENT SCORING INSTRUMENT

Connecticut Association of Schools
Middle Level Schools Effective Teaming Practices
Teaming Self Assessment Scoring Instrument

This document is intended as a self-assessment instrument for *CAS Exemplary Teaming Practices* certification. The CAS Middle Level Professional Studies Committee has weighted each statement to reflect the importance attached to it. Each item should be assigned a point value from 0 to the maximum possible point total listed in column 1.

Possible Points	Points	Characteristics
5		Teams are characterized by small communities of learners sharing the same teachers. Look for teams of 2, 3, 4, or 5 teachers with number of students commensurate with the number of teachers (2 & 3 person better than 5).
3		Teams have a written mission, philosophy, goals and/or objectives and periodically assess direction of the teams. Look for documentation.
2		Every child and every core teacher is on a team. Look for teams that incorporate language arts, social studies, science, math in the team structure.
3		Related or Unified Arts Teachers are on teams. Look for art, music, computer science, technology, world language, health and physical education either on core teams or unified arts teams.
4		There is strong evidence of team identity. Look for team names, bulletin boards, team activities, tee shirts, team awards and recognitions.
5		All teams meet on a regular basis. Look for number of meetings (1 point for each day) or - minutes per week.
1		Teams or Team Leaders meet regularly with Administrators. Look for at least once a month.
1		Teams meet regularly with or include Special Education teachers. Look for special education teachers as part of core teams, or meetings with core team at least once a week.
5		Teams have structured meetings with an agenda, documentation and communication with others. Look for written agenda, published minutes or notebooks and system for sharing information with the rest of the school.
1		Teams meet regularly with guidance counselors. Look for at least bi-weekly.

5		Teams use a shared decision making process for group decisions and problem solving. Look for autonomy in making decisions that affect team rules, activities, special projects, and curriculum integration.
4		Teams have flexibility to adjust instructional time when appropriate. Look for alternative schedules for special projects and interdisciplinary units.
4		Teams group and re-group students for instruction. Look for heterogeneous grouping and or regular regrouping.
2		Teams have identified roles ad responsibilities for team members. Look for team leader, recorders, time keepers, etc.
4		Teams develop collaborative team expectations and rules. Look for teacher and student involvement in developing team rules and expectations.
4		Teams use students data to make decisions. Look for evidence that standardized testing, portfolios and student progress is used in decisions affecting placement and instruction.
4		Teams involve students in active learning. Look for student involvement in either selecting topics of study or choices of learning modes.
4		Teams regularly discuss instructional practices and student data to make decisions. Look for in-service mentoring and sharing of instructional practices.
5		Teams plan and execute integrated interdisciplinary units Look for integrated and/or interdisciplinary units.
3		Teams correlate subject matter/ curriculum map Look for schedules and calendars.
3		Teams regularly plan activities, field trips or celebrations / all team meetings. Look for schedules and calendars.
1		Teams coordinate meaningful homework assignments. Look for calendars or integration of assignments.
3		Teams hold regular parent/student conferences. Look for structured team meetings with parents with clear outcomes.
1		Teams coordinate test and major projects. Look for calendars.
4		Teams communicate regularly with parents. Look for newsletters, conferences, e-mail, homework hotline, etc.
4		Teams actively encourage parent involvement. Look for classroom volunteers, parent-teacher student activities.
5		Teams handle discipline problems together. Look for a tiered discipline model that has several steps before administrative involvement.
10		Overall Assessment Look for evidence of pride, collegiality, high involvement of all stakeholders and high student morale.
100		Total Points

Please complete and return to:
Mr. Earle G. Bidwell
Connecticut Association of Schools
30 Realty Drive
Cheshire, CT 06410

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APPENDIX F

SCHOOL DEMOGRAPHICS SURVEY

Dear Principal:
This survey pertains to all teams who taught 7th graders last year (04-05). There are no right or wrong answers and all responses will be kept strictly confidential. Please return your completed survey in the stamped envelope enclosed to:

Steven John
P.O. Box 325
Marlboro VT 05344

Thank you for your prompt reply!

School Name _____

If your middle school had only one seventh-grade teaching team last year, put a check here ___ and skip to Question 3.

1. To what extent did the following factors affect assignments of TEACHERS to teams?

	Little or None			A Great Deal
Balancing teacher personalities or temperaments	1	2	3	4
Student aptitude or achievement	1	2	3	4
Interpersonal compatibility	1	2	3	4
Keeping successful teams intact	1	2	3	4
Teacher choice	1	2	3	4

2. To what extent did the following factors affect assignments of STUDENTS to teams?

Balancing student gender, ethnic background, or income	1	2	3	4
Level of student aptitude or achievement—performance homogeneity	1	2	3	4
Balancing student aptitude or achievement—performance heterogeneity	1	2	3	4
For students who were on teams the previous year, keeping teams together—"looping"	1	2	3	4

3.For each team serving seventh graders during the 04-05 year . . .

Team name _____

What percentage of students were girls? _____

What percentage of students had IEPs? _____

Name 2 or 3 things about this team or about the way its members work together that you consider team strengths.

_____

_____

_____

Name 2 or 3 things about this team or about the way its members work together that you would like to see improved.

_____

_____

_____

Team name _____

What percentage of students were girls? _____

What percentage of students had IEPs? _____

Name 2 or 3 things about this team or about the way its members work together that you consider team strengths.

_____

_____

_____

Name 2 or 3 things about this team or about the way its members work together that you would like to see improved.

_____

_____

_____

Over for additional teams --->

APPENDIX G

INVITATION TO PARTICIPATE IN THE STUDY

October 28, 2005

Dear Colleague:

Many teachers and administrators believe that teaching teams play an essential role in educating adolescents. In fact, researchers have documented that team teaching has a positive effect on student learning, behavior and achievement. However, the public's increased emphasis on achievement test scores, combined with local boards' struggles to pass budgets, call to question the allocation of our limited school resources. Given the requirements for accountability mandated by the NCLB Act of 2002, the purpose of my doctoral research is to determine if some of the practices related to team teaching correlate with improvements in student achievement. I hope to demonstrate that teaching teams are worth the time and effort that they require.

The Vermont Association of Middle Level Education (VAMLE) and the New England League of Middle Schools (NELMS) urge you to consider taking part in this study. Please review the enclosed abstract of my research proposal and biography. Your participation will contribute to our understanding of how teaching teams in Vermont may affect student achievement.

If you choose to participate, members of your school's 7th grade teaching team(s) will individually complete a group dynamics survey, *How We Function as a Team*, before collaborating to complete the *Teaching Team Survey*. See the enclosed copies for your review and distribution to your staff.

Thank you for looking over the enclosed materials including the informed consent document required by the University of Massachusetts. Should you have any questions, you can reach me at (w)802-365-7355x122, (h)802-257-0810, (fax)802-365-7146, or sbjohn@sover.net.

I appreciate your willingness to participate in this research. Please refer to the *pink sheet for step-by-step directions* to support this work. If I don't hear from you by November 15th, I may give you a call to follow up on this invitation.

Thanks again for making time in your busy day for this study.

Sincerely,

Steven John
Doctoral Candidate at U. Mass., Amherst, and Middle School Principal

A study of Team Teaching and Student Achievement

Directions for Participation:

Step 1: Principal signs consent to participate form (white) and completes the *School Demographics Survey* (yellow) and returns them using the stamped self-addressed envelope marked "Principal". Please complete **step 1 by Nov. 15.**

Step 2: Principal distributes copies of the *How We Function as a Team* survey (blue) to all members of teams who taught 7th graders last year (04-05). Ask teachers to return these **completed surveys to your mailbox by Nov. 11.**
Please return these surveys in the "Principal" envelope. (See Step 1.)

Step 3: Principal distributes one copy of the *Teaching Team Survey* (green) with the attached self-addressed envelop to each team. Please do not distribute the *Teaching Team Survey* (green) until all members of the team complete their individual surveys (blue).
Have **teams mail their completed survey using the stamped "Teaching Team Survey" envelope by Nov. 22.**

Thank you for your attention to these details and have a great Thanksgiving!

Informed Consent Document

Thank you for participating in a study to determine which aspects of team teaching promote student achievement. One indicator of student achievement will be the *New England Comprehensive Assessment Program* (NECAP) test. I will analyze the relationships between scores of 8th grade students on the NECAP tests this fall (2005) and characteristics and activities associated with the student's teaching team for the 7th grade last year (2004-2005). At the conclusion of my study, I will provide each participating school with an executive summary of the results of this research. According to what I learn from my analysis, I will give feedback to teams related to the elements of team teaching that matter most.

Teachers will be asked

(a) Individually, to complete a ten-minute questionnaire about your team.
(b) Collaboratively with your team, to complete a 35-minute *Teaching Team Survey.*

Principals will be asked to

(a) Complete a five-minute questionnaire relating to teaching team composition.
(b) Assemble NECAP 8th grade student achievement data by the students' 7th grade team for 2004-2005.

Your participation in this study is voluntary and confidential to the maximum extent allowable under federal, state and local law. Feel free to skip any question that you do not want to answer. Your name will never be associated with the information you provide in this study, and no identifying information will ever be released to anyone. All the information gathered in this study will be kept confidential in locked storage accessible only to me. Any information that could identify you will be destroyed at the conclusion of the study. Only pseudonyms will be used in any publications or presentations resulting from this study. I will preserve the confidentiality of individual students, teaching teams and schools.

Should your team(s) decide to participate, you will have the right to withdraw from all or part of this study at any time. All materials related to your teaching team(s) would then be destroyed.

If you have any *questions regarding this study*, please contact Steven John or his advisor:

Dr. Matt Militello, Assistant Professor, University of Massachusetts
Program Coordinator, Educational Administration
111 Infirmary Way, Hills South Rm. 263, Amherst, MA 01003
work: [413] 545.1188, home: [413] 549.3735
e: mattm@educ.umass.edu

Your signature below indicates your voluntary agreement to participant in the study.

Abstract

In the 1990s many educators purported that interdisciplinary teams of teachers working with students in middle grades 5-8 were more effective than traditional instruction in isolated disciplines. Research reported elements of team teaching positively affect student learning, behavior, and achievement (Arhar, 1990, 1994, Arhar & Irvin, 1995, Erb, 1997, Flowers, et al., 1999, Mertens, et al., 1998). The purpose of this dissertation is to determine which team teaching characteristics and practices, if any, correlate with improvements in eighth grade student performance in mathematics, reading and writing. Student performance will be compared across teaching teams as measured by the New England Comprehensive Assessment Program (NECAP). The independent variables of teaching team characteristics and practices, will be measured by (1) a team self-assessment survey developed using dimensions of teaching teams identified by the Connecticut Association of Schools (CAS), (2) a questionnaire to be completed individually about how team members work together, and (3) a survey for principals. In the era of high stakes accountability required by the No Child Left Behind Act of 2002, this study will elucidate the elements of teaching teams that improve student performance. These findings have implications for policy, practice and future research.

Biography

Steven John is Principal of Leland and Gray Union Middle School, Townshend, Vermont 05353. A doctoral candidate at U. Mass., Amherst, Mr. John discovered teaching while serving in the Peace Crops (Malaysia '69 – '71). He is a graduate of Occidental College and earned his M.Ed. at Antioch New England. He has taught kindergarten through adult classes. In 1986 the University of Vermont recognized Mr. John with a Teaching Excellence Award. An advocate for early adolescents, Mr. John is President of the Vermont Association of Middle Level Education (VAMLE). He supports the pedagogic principles found in *This We Believe* (National Middle School Association) to achieve and sustain excellence in the middle grades.

Human Subjects Review Questionnaire
For Doctoral Form D-7B

Steven B. John
Concentration: Educational Policy and Leadership
Proposed Study: Team Teaching and Student Achievement in Vermont's Middle Schools

1. **How will human participation be used?**

Principals will report demographics and characteristics of their school and teaching teams. Principals will coordinate the completion of surveys in their school. Members of teaching teams will complete one survey *How We Function as a Team* anonymously. They will collaborate to complete the *Team Teaching Survey* identified only by the team's name.

2. **How have you ensured that the rights and welfare of the human participants will be adequately protected?**

Only the names of schools, their principals and teaching teams will be known to me. In the consent form, I stipulate that all identifiable materials will be kept under lock and key, accessible only to me. These materials will be destroyed at the completion of the study. Participants are informed that they may withdraw from the study at any time. Any conclusions drawn and/or publication of the results of this study will use pseudonyms to protect individual's identity and confidentiality.

3. **How will you provide information about your research methodology to the participants involved?**

An abstract will be provided to the superintendents and principals of all schools invited to participate. My personal biography and contact information will be provided to answer any questions participants may have regarding this study.

4. **How will you obtain the informed voluntary consent of the human participants or their legal guardians?**

The consent form follows the format required by U. Mass. Principals of participating schools will sign the attached consent form and return it using the self-addressed stamped envelope supplied.

5. **How will you protect the identity and/or confidentiality of your participants?**

Identification numbers will me assigned instead of any names (schools, principals, teams) associated with any surveys and data collected. The design of this study does not require the names of teachers or students.

APPENDIX H

CALCULATING EXPECTED STUDENT PERFORMANCE SCORES

Each school's target or estimated deviation from the average Student Performance (SP) is equal to a constant times that school's deviation from the average Proportion of Families (PF) whose income is under $75,000, where the constant = the correlation between SP and PF multiplied by the standard deviation of SP divided by the standard deviation of PF.

For example: WRTLOCUT student performance (SP) on the NECAP test.

The VT state average percentage of grade 8 students meeting the WRTLOCUT student performance (SP) is 87%. Given that the correlation between WRTLOCUT and PRLES75K is -.248 and the standard deviations for WRTLOCUT and PRLES75K are .12329 and .11186 respectively, the constant for predicting a school's WRTLOCUT score = -.248 (.12329 / .111860) = -.248 (1.10218) = -.27334 or -.273.

Apply this calculated constant to School A. In the database, this predicted or expected score is labeled W234ABEX, whereas WRTLOCUT is the school's actual score.

To calculate W234ABEX take the constant for WRTLOCUT (-.273) times School A's PRLES75K deviation from the VT mean for PRLES75K. This will result in School A's predicted deviation from the VT mean WRTLOCUT score.

School A's deviation for PRLES75K is 79.4% minus 72.6% = .6.8% or .068.

Therefore School A's predicted deviation from the VT mean low cut writing score = -.273 times .068 = -.018564 or -.0186 or -1.86%.

Since the VT mean low cut writing score (WRTLOCUT) is 87% or .87, then the predicted low cut writing score for School A (W234ABEX) when adjusted for the affect of household incomes is W234ABEX = 87% - 1.86% = 85.14%.

APPENDIX I

FREQUENTLY ASKED QUESTIONS REGARDING
ADEQUATE YEARLY PROGRESS (AYP)

Updated 4/6/07

Selected questions and answers from the Vermont Department of Education website at http://education.vermont.gov/new/html/pgm_accountability/ayp_faq.html#elements.

How AYP Decisions Are Made.

1. What is the LEA for accountability?

For accountability purposes, the LEA is the town or union school district. LEA stands for Local Education Agency.

2. How often is an accountability decision made for schools and LEAs?

The decision is made annually and is based on one year of results.

3. What elements are considered in determining whether a school or school district has made Adequate Yearly Progress (AYP)?

 Student Performance: A Mathematics Achievement Index and a Reading/English Language Arts (ELA) Achievement Index are calculated from state assessments results of all students in tested grades. For grades 3–8, students are tested in the fall on the academic content taught in the previous school year.

 Student Participation: The student participation rate is based on the number of students in the tested grades who were enrolled for the official test window for all Vermont state assessments (regular and alternate).

 Academic Indicator: The state designates another measure, such as graduation rate, that is closely associated with student achievement and applicable to the grade span of the school or school district.

 For the Spring 2006 AYP decision, it is the graduation rate for all schools containing the 9–12 grade span.

 For all other schools, it is the percentage of students in the bottom achievement level of NECAP Reading.

4. How and when will AYP decisions be made for 9-12 high schools? (Updated 4/6/07)

In Spring 2007, only the academic indicator, graduation rate, was used to make AYP decisions for 9–12 high schools. After the transition to the grade 11 NECAP in Fall 2007, we will use one year of results and re-establish AMOs based on NECAP results.

5. For which student groups must we determine AYP?

For every school, AYP must be determined for all tested students, regardless of the number of students and for any of the following groups for which there are 40 or more students in the Mathematics Achievement Index or 40 or more students in the Reading/ ELA Achievement Index:

- Economically disadvantaged (free or reduced lunch) students
- Students with disabilities (IEP)
- Limited English proficient (LEP) students
- Six major racial ethnic groups

10. Besides making AYP on the achievement indexes, what other criteria must the school or school district meet?

In order to meet AYP, for the All Student group:

- It must ensure that 95 percent of students are assessed
- It also must meet the criteria established for the applicable academic indicator

For all other disaggregated AYP groups of 40 or more students in either achievement index:

- The 95 percent participation rate must be met
- The academic indicator criteria must be met ONLY if the group meets AYP on its achievement index by using "Safe Harbor"

21. What can schools do about issues out of their control, like poverty, etc.?

Although we recognize that there are factors outside the immediate control of the school that affect student learning and achievement, schools can work with families and communities to ensure that there are appropriate supports for students in the classroom and beyond. This can vary from school to school. In situations where there are higher numbers of students from low-income families, a different level of resources and strategies may be needed. Formative assessment and differentiated instructional practices combined with early education programs, both school and community based, after-school programs, mentoring programs, etc., help to address achievement gaps before they are established and prevent them from widening.

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